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THE INTERNATIONAL SCIENTIFIC SERIES.

MYTH AND SCIENCE.

AN ESSAY.

BY

TITO VIGNOLI.

NEW YORK:
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MYTH AND SCIENCE.

CHAPTER I.

THE IDEAS AND SOURCES OF MYTH.

Myth, as it is understood by us, and as it will be developed and explained in this work, cannot be defined in summary terms, since its multiform and comprehensive nature embraces and includes all primitive action, as well as much which is consecutive and historical in the intelligence and feelings of man, with respect to the immediate and the reflex interpretation of the world, of the individual, and of the society in which our common life is passed.

We hold that myth is, in its most general and comprehensive nature, the spontaneous and imaginative form in which the human intelligence and human emotions conceive and represent themselves and things in general; it is the psychical and physical mode in which man projects himself into all those

phenomena which he is able to apprehend and perceive.*

We do not propose to consider in this treatise the myths peculiar to one people, nor to one race; we do not seek to estimate the intrinsic value of myths at the time when they were already developed among various peoples, and constituted into an Olympus, or special religion; we do not wish to determine the special and historical cause of their manifestations in the life of any one people, since we now refrain from entering on the field of comparative mythology. It is the scope and object of our modest researches to trace the strictly primitive origin of the human myths as a whole; to reach the ultimate fact, and the causes of this fact, whence myth, in its necessary and universal form, is evolved and has its origin.

We must therefore seek to discover whether, in addition to the various causes assigned for myth in earlier ages, and still more in modern times by our great philologists, ethnologists, and philosophers of every school—causes which are for the most part extrinsic —there be not a reason more deeply seated in our nature, which is first manifested as a necessary and spontaneous function of the intelligence, and which is therefore intrinsic and inevitable.

In this case myth will appear to us, not as an accident in the life of primitive peoples varying in

* Simrock wrote: "Myth is the earliest form in which the mind of heathen peoples recognized the universe and things divine."

intensity and extent, not as a vague conception of things due to the erroneous interpretation of words and phrases, nor again as the fanciful creation of ignorant minds; but it will appear to be a special faculty of the human mind, inspired by emotions which accompany and animate its products. Since this innate faculty of myth is indigenous and common to all men, it will not only be the portion of all peoples, but of each individual in every age, in every race, whatever may be their respective conditions.

Myth, therefore, will not be resolved by us into a manifestation of an obsolete age, or of peoples still in a barbarous and savage state, nor as part of the cycle through which nations and individuals have respectively passed, or have nearly passed; but it remains to this day, in spite of the prevailing civilization which has greatly increased and is still increasing, it still persists as a mode of physical and intellectual force in the organic elements which constitute it.

Nor, let it be observed, do I say that such a mythical faculty persists as such only among the ignorant masses in town or country, in the form of those very ancient superstitions which have been collected with immense labour by learned mythologists and ethnologists; on the contrary, I maintain that the mythical faculty still exists in all men, independently of this survival of old superstitions, to whatever people and class they may belong; and it will continue

to exist as an innate function of the intelligence, if not with respect to the substance, which may alter, at any rate in the mode of its acts and proceedings.

I fear that this opinion will appear at first sight to be paradoxical and chimerical, since it is well known that the mythical conception of the world and its origin is gradually disappearing among civilized nations, and it is supposed to be altogether extinct among men of culture and intelligence. Yet I flatter myself, perhaps too rashly, that by the time he reaches the end of this work, the reader will be convinced of the truth of my assertion, since it is proved by so many facts, and the psychical law from which it results is so clear.

It must not, however, be forgotten that, in addition to the mythical faculty of our minds, there exists the scientific faculty, the other factor of a perfect intellectual life; the latter is most powerful in certain races, and must in time prevail over the former, which in its objective form precedes it; yet they are subjectively combined in practice and are indissolubly united through life.

Undoubtedly neither the mythical nor the scientific faculty is equal and identical in all peoples, any more than they are equal and identical in individuals; but they subsist together, while varying in intensity and degree, since they are both necessary functions of the intelligence.

Whether we content ourselves with studying the mental and social conditions in the lower types of modern peoples, or go back to the earliest times, we find men everywhere and always possessed of the power of speech, and holding mythical superstitions, it may be of the rudest and most elementary kind; so also do we find men possessed of rational ideas, although they may be very simple and empirical. They have some knowledge of the causes of things, of periods in the phenomena of nature, which they know how to apply to the habits and necessities of their social and individual lives.

No one, for example, would deny that many mythical superstitions, and fanciful beliefs in invisible powers, existed among the now extinct Tasmanians, and are now found among the Andaman islanders, the Fuegians, the Australians, the Cingalese Veddahs, and other rude and uncultured savages. On the other hand, those who are acquainted with their mode of life find that savages are not absolutely devoid of intellectual activity of an empirical kind, since they partly understand the natural causes of some phenomena, and are able, in a rational, not an arbitrary manner, to ascribe to laws and the necessities of things many facts relating to the individual and to society. They are, therefore, not without the scientific as well as the mythical faculty, making due allowance for their intellectual condition; and these primitive and natural instincts

are due to the physical and intellectual organism of human nature.

In order to pursue this important inquiry into the first and final cause of the origin of myth, it is evidently not enough to make a laborious and varied collection of myths, and of the primitive superstitions of all peoples, so as to exhaust the immense field of modern ethnography. Nor is it enough to consider the various normal and abnormal conditions of psychical phenomena, nor to undertake the comparative study of languages, to ascertain how far their speech will reveal the primitive beliefs of various races, and the obscure metaphorical sayings which gave birth to many myths. It is also necessary to subject to careful examination the simplest elementary acts of the mind, in their physical and psychical complexity, in order to discover in their spontaneous action the transcendental fact which inevitably involves the genesis of the same myth, the primary source whence it is diffused by subsequent reflex efforts in various times and varying forms.

In speaking of the transcendental fact, it must not be supposed that I allude to certain well-known *a priori* speculations, which are opposed to my temper of mind and to my mode of teaching. I only use the term transcendental because this is actually the primitive condition of the fact in its inevitable beginning, whatever form the mythical representation may

subsequently take. This fact is not peculiar to any individual, people, or race, but it is manifested as an essential organism of the human character, which is in all cases universal, permanent, and uniform.

In order to give a clear explanation of my estimate of the *a priori* idea, which also takes its place as the factor of experimental and positive teaching, I must observe that for those who belong to the historical and evolutionary school, *a priori*, so far as respects any organism, habit, and psychological constitution in the whole animal kingdom, in which man is also included, signifies whatever in them is fixed and permanently organized; whatever is perpetuated by the indefinite repetition of habits, organs, and functions, by means of the heredity of ages. The whole history of organisms abounds with positive and repeated proofs of this fact, which no one can doubt who is not absolutely ignorant of elementary science. Every day adds to the number of these proofs, demonstrating one of those truths which become the common property of nations.

A priori is therefore reduced by us to the modification of organs in their physical and psychical constitution, as it has ultimately taken place in the organism by the successive evolutions of forms which have gradually become permanent, and are perpetuated by embryogenic reproduction. This reproduction is in its turn the absolute condition of psychical and organic facts, which are thus manifested as primi-

tive facts in the new life of the individual. By this law, the psychical facts, whether elementary or complex, as they occur in the individual up to the point of their evolution, have the necessary conditions of possibility, and may therefore be termed *a priori* with respect to the laws of evolution, and to the hereditary permanence of acts performed in the former environment of the organism at the time when they appeared.

This conception of *a priori* is, it must be admitted, very different from that of transcendental philosophers, who seek to prove either that an independent artificer has not only produced the various organic forms in their present complexity, and has specially provided the spiritual subject with its category of thought, independently of all experience; or else they assert the intrinsic existence of such forms in the spirit, from the beginning of time.

In this way, as we have already said, we must not only collect the facts which abound in history and ethnology respecting the general teaching of myths, but we must also observe introspectively, and by pursuing the experimental method, the primitive and fundamental psychical facts, so as to discover the *a priori* conditions of the myth itself. We must ascertain, from a careful psychological examination, the absolutely primitive origin of all mythical representations, and how these are in their turn the actual historical result of the same conditions, as they existed prior to their manifestations.

It must not be supposed that in this primary fact, and in these *a priori* psychical and organic conditions, we shall find the ulterior cause of the various and manifold forms, or of the successive evolution of myths. This would be a grave mistake, equal to that of transcendentalists, who imagine that the laws which actually exist, and the order of cosmic and historic phenomena may be determined from the independent exercise of their own thoughts, although such laws and order can only be traced and discovered by experience and the observation of facts. In the *a priori* conditions of the psychical and organic nature, and in the elementary acts which outwardly result from them, we shall only trace the origin and necessary source of myth, not the variable forms of its successive evolution.

The ulterior form, so far as the substance of the myth and its various modifications are concerned, is in great part the reflex work of man; its aspect changes in accordance with the attitude and force of the faculties of individuals, peoples and races, and it depends on an energy to which the *a priori* conditions, as we have just defined them, do not strictly apply so far as the determinate form is concerned.

It is precisely in this ulterior work of the evolution of myth, which in the elementary fact of its primitive essence had its origin in the predisposition of mind and body, that we may discern the interchangeable germ and origin both of myth and science. If, therefore, the rationale of science cannot be found in the general

form of mythical representations, the matter which serves to exercise the mind; yet the mode of its exercise, and of the logical and psychical faculty, and the spontaneous method pursued, are identical: the two mythical and scientific faculties are, in fact, considered in themselves, fused into one.

As far as the origin of myth is concerned, the mode of considering its evolution, and its organic connection with science, we differ from other mythologists as to the sources to which they trace this immense elaboration of the human intelligence. We may be mistaken, but we are in any case entering on unexplored ways, and if we go astray, the boldness of an enterprise which we undertake with diffidence pleads for indulgence.

Omitting to notice the well-known opinions on the origin of myth which were current in classic antiquity, in the Græco-Latin world, or in India,* we restrict our inquiry to modern times subsequent to Creuzer's

* *Kumarila*, in reply to the opponents who inveighed against the immorality of his gods, wrote that the fable relates how Prajâpati, the lord of creation, violated his own daughter. But what does this signify? Prajâpati is one name for the sun, so called because he is the lord of light. His daughter Ushas is the dawn, and in declaring that he fell in love with her, it is only meant that when the sun rises, it follows the dawn. So also, when it is said that Indra seduced Ahalyâ, we are not to suppose that God committed such a crime, but Indra is the sun, and Ahalyâ is the night; and so we may say that the night is seduced and conquered by the morning sun. This, and other instances may be found in Max Müller's *History of Ancient Sanscrit Literature*. Other instances might be given.

learned and extensive labours. In a more scientific method, and divested of prejudice, we propose to trace the sources of myth in general, and among various peoples in particular.

The science of languages, or comparative philology, is the chief instrument required in such researches, and much light has been acquired in our days, which has led to surprising results, at least within the sphere of the special races to which it has been applied. The names of Kuhn, Weber, Sonne, Benfey, Grimm, Schwartz, Hanusch, Maury, Bréal, Pictet, l'Ascoli, De Gubernatis, and many others, are well known for their marvellous discoveries in this new and arduous field. They have not only fused into one ancient and primitive image the various myths scattered in different forms among the Aryan races, but they have revealed the original conception, as it existed in the earliest meaning of words before their dispersion. Hence came the multiplicity of myths, developed in brilliant anthropomorphic groups in different theologies, gradually becoming more simple as time went on, then uniting in the vague primitive personification of the winds, the storms, the sun, the dawn; in short, of astral and meteorological phenomena.

On the other hand, Max Müller, whose theory of original myths is peculiar to himself, has made use of this philological instrument to prove that the Aryan myths may at any rate be referred to a single source, namely to metaphor, or to the double meaning

of words, due to the poverty of primitive languages. He calls this double meaning the infirmity of speech.

I do not deny that many conclusions to which some or other of the great authorities just mentioned have arrived may be as true as they are surprising. I also admit that this may be a certain method of distinguishing the various mythical representations in their early beginnings from their subsequent and complex forms. But in all the facts which have been ascertained, or which may hereafter be ascertained, from the comparative study of the languages of different races, no explanation is afforded of the fact that into the natural and primitive phenomena of myth, or, as Müller holds, into its various metaphors, man has so far infused his own life, that they have, like man himself, a subjective and deliberate consciousness and force. It seems to me that this problem has not yet been solved by scholars; they have stopped short after establishing the primary fact, and are content to affirm that such is human nature, which projects itself on external things.*

* Vico writes: "The human mind is naturally inclined to project itself on the object of its external senses." And again, "Common speech ought to bear witness to ancient popular customs, celebrated in times when the language was formed." So again: "Men ignorant of the natural causes of things assign to them their own nature. . . ." In another place: "The physical science of ignorant men is a kind of common metaphysics, by which they assign the causes of things which they do not understand to the will of the gods." Again: "Ignorant and primitive men transform all nature into a vast living body, sentient of passions and affections."

This explanation establishes a true and universal fact, but it is not the explanation of the fact itself; yet it is not, as we shall see, incapable of solution, and it appears to me that the ultimate source whence myths really proceed has not been reached.

Again, if such an opinion and such a method can give us the key to the polytheistic origin of the respective Olympuses of classic Greece and Rome, it leaves unexplained the numerous and manifold superstitions which philology itself proves to have existed prior to the origin of cosmic myths. These superstitions can by no means be referred to a common source, to the astral and meteorological myths, some of which were prior, while others were subsequent to these superstitions.

Taking, therefore, the general and more important opinions which are now current respecting the origin of myth, it may be said that in addition to the systems already mentioned, two others are presented to us with the weight of authority and knowledge; these, while they do not renounce the appliances and linguistic analyses of the former, try to unite all the mythical sources of mankind in general into a single head, whence all myths, beliefs, superstitions, and religions have their origin. While France and Germany and some other nations have achieved distinction in this field, England has been especially remarkable for the nature of her attempts, and the vastness of her achievements in every direction. We pass over many

great minds which were first in the field in order to dwell on the two men who, as it seems to me, have summed up the knowledge of others, and have formulated a theory in great measure peculiar to themselves.

Tylor's well known name will at once suggest itself, and that of Herbert Spencer; the former, in his great work on the "Early History of Mankind and of Civilization," and other writings, the latter, in the first volume of his "Sociology," and in his earlier works, have respectively established the doctrine of the universal origin of myths on the basis of ethnography, on the psychological examination of the primary facts of the intelligence, and on the conception of the evolution of the general phenomena of nature.

It would, indeed, be difficult to excel the great mind, the acute genius, and the universal learning of Herbert Spencer, who has been termed the modern Aristotle by a learned writer; and this is high praise when we remember how much knowledge is necessary in our times, and in the present conditions of science, before any one can be deemed worthy of such a comparison. But with due respect to so great a man, and with the diffidence of one who is only his disciple, I venture to think that Herbert Spencer's attempt to revive, at any rate in part, Evemero's theory of the origin of myths will not be successful, and it may prove injurious to science. First, because all myths cannot be reduced

to personal or historical facts; and next, because the primitive value of many of them is so clear and distinct in their mode of expression that it is not possible to derive them from any source but the direct personification of natural phenomena. Nor does it appear to me to be always and altogether certain that the origin of myths, also caused by the double personality discerned in the shadow of the body itself, in the images reflected by liquid substances, in echoes and visions of the night, can be all ascribed to the worship of the dead.

The worship of the dead is undoubtedly universal. There is no people, ancient or modern, civilized or savage, by whom it has not been practised; the fact is proved by history, philology and ethnography. But if the worship of the dead is a constant form, manifested everywhere, it flourishes and is interwoven with a multitude of other mythical forms and superstitious beliefs which cannot in any way be reduced to this single form of worship, nor be derived from it. This worship is undoubtedly one of the most abundant sources of myth, and Spencer, with his profound knowledge and keen discernment, was able to discuss the hypothesis as it deserves; whence his book, even from this point of view, is a masterpiece of analysis, like all those which issue from his powerful mind.

Yet even if the truth of this doctrine should be in great measure proved, the question must still be asked

how it happens that man vivifies and personifies his own image in duplicate, or else the apparitions of dreams or their reflections, and the echoes of nature, and ultimately the spirits of the dead.

Tylor developed his theory more distinctly and at greater length, and he brought to bear upon it great genius, extraordinary knowledge, and a sound critical faculty, so that his work must be regarded as one of the most remarkable in the history of human thought. He belongs to the school of evolution, and his book strongly confirms the truths of that theory; since from the primitive germs of myth, from the various and most simple forms of fetishes among all races, he gradually evolves these rude images into more complex and anthropomorphic forms, until he attains the limits of natural and positive science. He admits that there are in mankind various normal and abnormal sources of myth, but he comes to the ultimate conclusion that they all depend on man's peculiar and spontaneous tendency to *animate* all things, whence his general principle has taken the name of *animism*. It is unnecessary to say much in praise of this learned work, since it is known to all, and cannot be too much studied by those who wish for instruction on such subjects.

But while assenting to his general principle, which remains as the sole ultimate source of all mythical representation, I repeat the usual inquiry; what causes man to animate all the objects which surround

him, and what is the cause of this established and universal fact? The marvellous ethnographic learning of the author, and his profound analysis, do not answer this question, and the problem still remains unsolved.

It is evident from what we have said, that the theory of the origin of myth has of late made real and important progress in different directions; it has been constituted by fitting methods, and with dispassionate research, laying aside fanciful hypotheses and systems more or less prompted by a desire to support or confute principles which have no connection with science. We have now in great measure arrived at the fundamental facts whence myth is derived, although, if I do not deceive myself, the ultimate fact, and the cause of this fact, have not yet been ascertained; namely, for what reason man personifies all phenomena, first vaguely projecting himself into them, and then exercising a distinct purpose of anthropomorphism, until in this way he has gradually modified the world according to his own image.

If we are able to solve this difficult problem, a fact most important to science and to the advancement of these special studies must result from it: the assimilation and concentration of all the sources of myth into a single act, whether normal or abnormal to humanity. To say that animism is the general principle of myth does not reduce the different sources whence it proceeds to a single psychical and organic

act, since they remain distinct and separate in their respective orbits. To attain our object, it is necessary that the direct personification of natural phenomena, as well as the indirect personification of metaphor; the infusion of life into a man's own shadow, into reflex images and dreams; the belief in the reality of normal illusions, as well as of the abnormal hallucinations of delirium, of madness, and of all forms of nervous affections; all these things must be resolved into a single generating act which explains and includes them. It must be shown how and why there is found in man the possibility of modifying all these mythical forms into an image supposed to be external to himself, living and personal. For if we are enabled to reply scientifically to such inquiries, we shall not only have concentrated in a single fact all the most diverse normal and abnormal forms of myth peculiar to man, but we shall also have given an ulterior and analytic explanation of this fact.

I certainly do not presume to declare myself competent to effect so much, and I am more conscious than my critics how far I fall short of my high aim; but the modest attempt, made with the resolution to accept all criticism offered with courtesy and good faith, does not imply culpable presumption nor excessive vanity.

I regret to say that it is not on this point only that my theory of myth differs from that of others; I shall not be satisfied if I only succeed in discover-

ing in man the primitive act which issues the general animism of things, which becomes the substance of the ulterior myths in their intellectual and historical evolution. It is evident, at least to those who do not cling obstinately to old traditions, that man is evolved from the animal kingdom. The comparative anatomy, physiology, and psychology of man and other animals distinctly show their intimate connection in conformation, tissues, organs, and functions, and above all, in consciousness and intelligence. This truth, deduced from simple observation and experiment, must lead to the conviction that all issued from the same germ, and had the same genesis.

For those who do not cherish pedantic and sectarian prejudices, this hypothesis is changed into assurance by modern discoveries; it is shown in the transformations and transitions of paleontological forms; in the embryogenic evolution of so many animals, man included, which, according to their various species, reveals the lower types whence they issued; in the successive forms taken by the fœtus; in the powerful and indisputable laws of selection; in the modifications by adaptation of the different organisms, and in the effects of isolation. This is the only rational explanation, confirmed as it is by fresh facts every day, of the multiplicity and variety of organic forms in the lapse of time; unless, indeed, we ascribe such variety to a miracle, even more difficult to accept than the difficulties of the opposite theory.

I admit that evidence for the complete demonstration of this theory is sometimes wanting; the gaps between the fossil fauna and flora and those of modern times are neither few nor unimportant; but on the other hand, such proofs are accumulating, and the gaps are filled up every day, so that we may almost assert that in some way or other, by means somewhat different from those on which we now rely, the great rational principle of evolution will be successfully and permanently established.

It is more than twenty years since, in ways and by study peculiar to ourselves, we first devoted ourselves to this theory, and while we gave a conscientious consideration to opposite theories, so as to estimate with sincerity their importance and value, we could not relinquish our conviction that every advance in physical, biological, and social science served to confirm the theory of evolution.

It must not be supposed that I make any dogmatic assertion, which might possibly be erroneous, when I say that the evidence of facts does not contradict the assumptions of modern science. Sincere convictions should offend no one, nor do they indicate an *a priori* conflict with other beliefs. Every one is justified in thinking his own thoughts when he speaks with moderation and supports his peculiar opinions with a certain amount of learning.

It is not denied, even by those who oppose modern theories respecting the genesis of organisms, that

there are, excluding some psychical elements, many and important points of resemblance between man and animals in the exercise of their consciousness, intelligence, and emotions, if indeed they are not identically the same. The comparative psychology of man and animals plainly shows that the perceptions, both in their respective organs and in their mode of action, act in the same way, especially in the higher animals; and the origin, movements, and associations of the imagination and the emotions are likewise identical. Nor will it be disputed that we find in animals implicit memory, judgment, and reasoning, the inductions and deductions from one special fact to another, the passions, the physiological language of gestures, expressive of internal emotions, and even, in the case of gregarious animals, the combined action to effect certain purposes; so that, as far as their higher orders are concerned, animals may be regarded as a simple and undeveloped form of man, while man, by his later psychical and organic evolution, has become a developed and complex animal.*

In my book on the fundamental law of intelligence in the animal kingdom, I attempted to show this great truth, and to formulate a principle common to all animals in the exercise of their psychical emotions,

* See, among other authorities for the most important phenomena of animals in their natural associations, the profoundly learned work by the well-known A. Espinas: *Des sociétés animales: étude de l'psychologie comparée.* Paris, 2nd edit., 1879.

by setting forth the essential elements as they are generally displayed. I think I was not far from the truth in establishing a law which seems indubitable; although, while some men whose opinion is worthy of esteem have accepted it, other very competent judges have objected to some parts of my theory, but without convincing me of error. I repeat my conclusions here, since they are necessary to the theory of the genesis of myth, which I propose to explain in this work. I hold the complete identity between man and animals to be established by the adequate consideration of the faculties, the psychical elements of consciousness and intelligence, and the mode of their spontaneous exercise; and I believe the superiority of man to consist not so much in new faculties as in the reflex effect upon themselves of those he possesses in common with the animals. The old adage confirms this theory: *Homo duplex.*

No one now doubts that animals feel, hear, remember, and the like, while man is able to exercise his will, to feel, to remember, deliberately to consider all his actions and functions, because he not only possesses the direct and spontaneous intuition with respect to himself and things in general which he has in common with animals, but he has an intuitive knowledge of that intuition itself, and in this way he multiplies within himself the exercise of his whole psychical life. We find the ultimate cause of this return upon himself, and his intuition of things, in

his deliberate will, which does not only immediately command his body and his manifold relative functions, but also the complex range of his psychical acts. This fact, which as I believe has not been observed before, is of great importance. It is manifest that the difference between man and other animals does not consist in the diversity or discrepancy of the elements of the intelligence, but in its reflex action on itself; an action which certainly has its conditions fixed by the organic and physiological composition of the brain.

If it should be said that the traditional opinion of science, as well as the general sentence of mankind, have always regarded reflection as the basis of the difference between animals and man, so that there is no novelty in our principle, the assertion is erroneous. Reflection, as an inward psychical fact, has certainly been observed by psychologists and philosophers in all civilized times, and instinctively by every one; nor could it be otherwise, since reflection is one of the facts most evident to human consciousness. But although the fact, or the intrinsic and characteristic action of human thought has been observed, and has often been discussed and analyzed in some of its elements, yet its genesis has not been declared, nor has its ultimate cause been discovered. We propose to discover this ultimate cause, and we refer it to the exercise of the will over all the elements and acts which constitute human

intelligence; an intelligence only differing from that of animals by this inward and deliberate fact, which enables man to consider and examine all his acts, thus logically doubling their range. This intelligence has in animals a simple and direct influence on their bodies and on the external world, in proportion to their diverse forms and inherited instincts; while in man, owing to his commanding attitude, it falls back upon itself, and gives rise to the inquiring and reflective habit of science.

We do not, therefore, divide man from other animals, but rather assert that many proofs and subtle analyses show the identity of their intelligence in its fundamental elements, while the difference is only the result of a reaction of the same intelligence on itself. Such a theory does not in any way interrupt the natural evolution and genesis of the animal kingdom, while the distinctive peculiarity of man is shown in an act which, as I believe, clearly explains the new faculty of reason acquired by him.

I must admit that in speaking of the psychical faculty as a force which possesses laws peculiar to itself, it has appeared to a learned and competent judge that I have conceded a real existence to this faculty, independently of the physiological conditions *through which* it manifests itself, which might be called a mythical personality in the constitution of the world. If I had really made such an assertion, it would be an error which I am perhaps more ready

than others to repudiate, as it will appear in the present work. I am far from blaming the courteous critics who allege such objections to my theory, and indeed I am honoured by their notice. I must blame myself for not having, in my desire to be brief, sufficiently defined my conception.

I hold the psychical manifestation to be not only conditioned by the organism, to speak scientifically, and to be rendered physiologically possible by these conditions, but I consider it to be of the same nature as the other so-called forces of the universe; such, for example, as the manifestations of light, of electricity, of magnetism, and the like. When physicists speak of these forces—if the necessities of language and the brevity of the explanation constrain us to adopt the term *forces*, as though they were real substances—they certainly do not believe, nor wish others to believe, that they are really such. It is well known that such expressions are used to signify the appearance under certain circumstances of some special phenomena which group themselves by their mode and power of manifestation into one generic conception as a summary of the whole. They always take place, relatively to these circumstances, in the same mode and with the same power, so that they may at once be experimentally distinguished from others which have been grouped together in like manner.

Such manifestations do not imply a real cosmic

entity of these forces, as if they were independent of the matter whence they issue; they are simply determinate and determinable modes of motions, of actions, and reactions in the elements of the world. For if magnetism appears to reveal itself in determinate elements, its modes of manifestation are peculiar to itself, and its efficacy with respect to other forces is also peculiar; yet it by no means follows that it possesses a substantial entity, or, as it were, displays personal activity among phenomena; it rather indicates that the elements of the world will, under given circumstances, act reciprocally in such a manner that we perceive phenomena which group themselves together and which we call magnetic or magnetism. And this explanation applies to other cases.

I therefore, speaking of psychical force in general, used the same terms; I certainly did not wish to constitute it into a personal and material entity of the universe, but I intended to assert that among the manifestations of the various forces of the world, defined as above, there is also this psychical force, characterized by phenomena and laws peculiar to itself, and which, as I have shown, is when exercised one of the greatest factors of the world. I repeat that if this force varies with the greater or less perfection of the organisms in which it is manifested, yet it possesses a law and fundamental elements by which it is so constituted that the same results will

ensue in the simplest as in the most complex form. This is the case with all the other forces of nature; they may be modified by existing circumstances, and yet they have laws and definite elements to distinguish them from all others. These forces, however, while they are distinct in their peculiar manifestations, and take effect through special qualities, quantities, and rhythmic movements, are all fused together in the infinite and eternal unity which constitutes the life of the universe. Neither here nor in my former work is there any question of that most difficult problem, the individual personality of man.*

Since there is between man and animals a relationship and a psychical identity, as well as a genetic continuity of evolution, it is impossible to deny that there is also in some degree a like continuity in the products and acts of the consciousness, the emotions, and the intelligence. This is asserted or admitted even by those who do not like to hear of the genetic continuity of evolution, nor is there now any school of thought which impugns such a truth. If this be true, as it undoubtedly is, and since we are treating of the genesis of myth in its earliest beginning, we

* I stated in my former essay on the fundamental law of the intelligence in the animal kingdom that philosophy was only the research into the psychical manifestations of the animal kingdom, and into those peculiar to man, in connection with the respective organisms in which they act, and with the estimate of their power as cosmic factors in the general harmony of the forces of the world.

will endeavour, with daring prompted by the theory of evolution, to discover if the first germ of these representations may not have already existed in the animal kingdom before it was evolved in man in the fetishtic and anthropomorphic form. This is an arduous but necessary inquiry, to which I am impelled by the doctrine of evolution, as it is properly understood, as well as by the universal logic of nature.

If I were to consider myth as it has ultimately been developed in man, it would be a strange and absurd attempt to trace out any points of resemblance with animals, who are altogether devoid of the logical faculty which leads to such development. But if, on the contrary, we endeavour to trace the earliest, spontaneous, and direct elements of myth as a product of animal emotions and implicit intelligence, such research becomes not only legitimate but necessary; since the instrument is the same, the effects ought also to be the same.

We have already said that the fact has been observed and generally admitted that the primary origin of myth in its essential elements consists in the personification or animation of all extrinsic phenomena, as well as of the dreams, illusions, and hallucinations which are intrinsic. It is agreed that this animation is not the reflex and deliberate act of man, but that it is the spontaneous and immediate act of the human intelligence in its elementary

consciousness and emotions. It must therefore be evident that this vague and continual animation of things ought to be found also in animals, especially in those of the higher types, in whom consciousness, the emotions, and the intelligence are implicitly identical with those of man. Consequently, that which is at first sight absurd becomes obvious and natural, and the fact is only strange and inexplicable to those who have not carefully considered it.

We must, however, declare that this primary fact is not irreducible, and that science ought not to be content to stop there, but should endeavour to explain and resolve it into its elements, so as to be able to say we have reached the point at which the genesis of myth really begins. This aim can only be attained by the decomposition by analysis of the primitive fact. Since intelligence in its essential elements, and in its innate and implicit exercise, appears to be the same in man and in animals, it is necessary to reduce the analysis of animal nature to a primary psychical fact, in order to see whether by this fact, which is identical also in man, the generating element of myth is really revealed.

I propose to show that this research will reveal truths hitherto unattained, and explain the general law, not merely of the extrinsic process of science and of myth, but also of civilization.

Starting from this wide basis, we must trace, step by step, the dawn, development, and gradual dis-

appearance of myth. Since it is our business to consider science as well as myth, and their respective relations in the evolution common to both, we must, as briefly as possible in the present work, pause to consider these two factors of the human mind, observing the beginnings, conditions, and modes in which the one arose and gradually disappeared, while the other advanced and triumphed. We must not only regard the progress and transformation of religions, but also of science, as it is revealed in the philosophic systems of every age, in the partial or complete discoveries of genius, and in the great and stupendous achievements of modern experimental science. It would require a long treatise to fill so wide a field, which we must restrict to the limits of a few pages. Since our readers are now generally acquainted with the course pursued by human thought, and with the progress of peoples, but few landmarks or formulas are necessary to enable them to clear away obscurity and estimate facts at their just value, so as to understand what civilization and science have to do with the evolution of myth, and of science itself.

A great corollary also ensues from studies undertaken with the aid of sociology, that is, the genesis, form, and gradual evolution of human societies. These vary in character, in attitude, in power, form, and duration, with the different characters of races, and thus fulfil in various ways the cycle of myth and science of which they are capable. It would

indeed be difficult to attain to a clear and adequate conception of the universal evolution of myth and science, but for the existence of a privileged race distinguished for its psychical and organic power, which from its beginning until now, although subject to many partial eclipses, has on the whole maintained its position in the world so as to present to us the long historical drama of its evolutions. Other races, peoples, or tribes have disappeared in the struggle for existence, or have remained essentially incapable of further progress even in a relatively inferior degree, so as to afford no aid in following the successive development of myth and science; while the Aryan family, a race to which I believe that the Semitic originally belonged,* furnishes the unbroken sequence of events and the stages of such complex evolution. Nor certainly is there any signs of the disappearance of this race, since every day its intellectual and territorial achievements, added to the instruments of a powerful material civilization, invigorate its strength and presage its indefinite duration in forms we are not able to foresee, unless indeed fatal astral or telluric catastrophes should hinder its progress or bring it to an end.

If we compare this race with itself at different epochs, and in the many different peoples into which

* See, with respect to the primitive unity of the Aryan and Semitic races, the works of the great philologist, T. G. Ascoli, and others.

it was severed, and if at the same time we confront it with the types of other peoples at various stages, from the rudest to the most civilized, it becomes possible to form a clear conception of the genesis and successive evolution of myth and science of which the human race is capable, and in this way we may understand the general law which governs such evolutions. This study also teaches us that humanity, whether we agree with monogenists or poligenists, is physically and psychically in all respects the same in its essential elements; in all peoples without distinction, as ethnography teaches us, the origin and genesis of myth, the implicit exercise of reason and its development, are, at all events up to a given point, absolutely identical. All start from the same manifestations and mythical creations, and these are afterwards developed according to the logical or scientific canons of thought, which are applied to their classification. Both among fetish-worshippers and polytheists there was a tendency towards monotheism, although sometimes it could only be discerned in a vague and confused manner.

If myth is, as I have said, to be considered from another point of view, as the spontaneous effect of the intelligence, and a necessary function, relatively to the primary act from which it begins, it might appear that myth would never cease to be, and that humanity, even as it is represented by the elect and enduring race, must always remain in this original illusion; so

that every man would have to begin again for himself in his own peculiar cycle of myth. But history shows that this is not the case, and that the mythic faculty gradually wanes and becomes weaker, even if it does not altogether cease to exist, a result which would not occur if myth were a necessary function of the intelligence.

I shall presently reply to such an objection; in the meanwhile, regarding the question superficially, I need only say that if the mythic faculty diminishes in one direction, and with respect to some forms and their corresponding substance, it has certainly not ceased to appear in another, exerting itself, as we shall see, in other forms and other substance. The common people, both urban and rural, do for the most part adhere to primitive and very ancient superstitions, as every one may know from his own experience, as well as from the writings of well known authors of nearly all the civilized nations of Europe. In fact, every man in the early period of his life constructs a heaven for himself, as those who study the ways of children are aware, and this has given rise to a new science of infantine psychology, set forth in the writings of Taine, Darwin, Perez, and others.

We also propose to show that the scientific faculty, which gathers strength and is developed from the mythical faculty, is in the first instance identical and confounded with it, but that science corrects and controls the primitive function, just as reason corrects

and explains the errors and illusions of the senses; so that the truly rational man issues, like the fœtus from its embryonic covering, out of its primitive mythical covering into the light of truth.

Every one must perceive that the study of the origin of myths has an important bearing on the clear and positive knowledge of mankind. In modern times biological science, such as ethnography and anthropology, have not only thrown much light on the genesis of organic bodies, of animals and of man, but they have afforded very important aid to psychological research, on account of the close connection between psychology and the general physical laws of the world. The mythical faculty in man, and its results, have received much light from these sciences, since the modifications induced in individuals and in peoples by many natural causes, organic or climatological, are based upon their physiological conditions. In the first chapters of Herbert Spencer's book on Sociology, there is a masterly investigation into the changes produced by climate, with its accidents and organic products, on the peculiar temperament of different peoples and races, and we must refer our readers to his admirable summary.

We avail ourselves of the aid afforded by all these branches of science in order to comprehend the true nature of man, and the place which he really occupies in the animal creation. Man should be estimated as all other products and phenomena of nature are

estimated, according to his absolute value, divested, as in the case of all other physical and organic sciences, of preconceived ideas or prejudices in favour of the supernatural. He should be studied as in physics we study bodies and the laws which govern them, or as the laws of their motions and combinations are studied in chemistry, allowance always being made for their reciprocal relations, and for their appearance as a whole. For if there be in the universe a distinction of modes, there is no absolute separation of laws and phenomena.

The various branches of science are only subjective necessities, consequent on the successive and gradual order of our comprehension of things; they are classifications of method, with no special reference to the undivided personality of nature. All are parts of the whole, and so also the whole is revealed in its several parts. They come to be in thought, as well as in reality, reciprocal conditions of each other; and he who is able to solve the problem of the world correctly in a simple movement of an atom, would be able to explain all laws and all phenomena, since every thing may ultimately be reduced to this movement. It is precisely this which has been attained by certain laws, so that the study of man must not be dissociated from this conception. It is necessary to regard him as a product of the forces of nature, with which he has certain properties in common. Although man may appear to

be a special and peculiar subject, yet he is connected with the universal system in which he lives by the elements, phenomena, and forces of which he consists.

It must not be supposed, as it is asserted with ever-increasing clamour, that such a method and theory can ever destroy the civilized basis of society, and the morality and dignity with which it should be informed, as if we were again reducing man to the condition of a beast. Such an outcry is in itself a plain and striking proof that we have not yet emerged from the mythical age of thought, since it is precisely a mythical belief which prompts this angry protest against the noble and independent research after truth.

It is impossible that the results of positive and rational science should in any way destroy the necessary conditions of civilized life and of the high standard of goodness which should form, elevate, and bring it to perfection. We must, however, remember that it was not rational science, nor the ethics of law, which established the *a priori* rules of a just and free society, but the necessities of society itself led to the *a posteriori* formulation of laws. Theoretic science subsequently explained these laws, and perfected their form and organism, infusing into them a nobler purpose; but it was the necessities of nature which first dictated the balance, system, and harmony of the alliances and associations of materials and phenomena as they now exist, which rendered possible the

first nucleus of human society, and which, in course of time, brought the component parts into definite relations with each other. It was subsequently the reflex and fitting work of thought to raise upon the foundation laid by nature a rational system of society, and then to bring its rules and forms to perfection.

Hence it follows that it was not man, nor some extrinsic mythical power which arbitrarily dictated the code of private and social life, but this presented itself to man as a spontaneous result of the world's law, relatively to the conditions possible for social life. For if, as in fact is the case, and as the progress of knowledge and of human civilization will abundantly show, the true and eternal laws which make society possible, and consequently its standard of righteousness, are innate and genuine results of universal laws, it is impossible for science to destroy the inevitable order of things, and to reduce mankind to a hideous chaos.

It must be allowed that great truths, not fully understood by incapable preachers, who sometimes from ignoble motives foment the turbid instincts of the ignorant multitude, may bring about, as they have done of old, grave evils and even crimes in some places and for a short time. But there is no one so foolish or so ignorant of history as to believe that all things happen in the best possible way, and in a logical sequence. Such evils do not invalidate or destroy the force of our assertion that social order is

derived from and is based upon the order of nature. Although savage passions, excited by an imperfect understanding of the truth, do from time to time cause the overthrow of given societies, and arouse the horror and alarm of pessimist votaries of myth, nature is not thereby overcome; she still triumphs, and restores the order which has been interrupted, so far as the instinct of conservatism and the hereditary impulse to that special form of association to which each people are accustomed are opposed to the revolutionary spirit, and in this way the balance which has been disturbed is re-established.

When men, having brought their intellectual, and consequently their moral sense to perfection, are enabled to understand this natural order of laws and social facts, divested of extrinsic mythical beliefs, they will find in it so much reciprocal benefit, and will have such a deep sense of their personal dignity, since they are intellectually their own artificers, that they will be able to understand how the highest good has ensued and will ensue from the sacrifices or achievements made by a few for the benefit of all. We are undoubtedly still a long way from such happy conditions, either socially or as individuals, but every day brings them nearer, and it is to this end that our civilization plainly tends, in spite of all the complaints, the fears, and sometimes even the malevolence of men.

As I have already said, the study of the beginnings

and of the anthropological conditions of the various myths is necessary to enable us to understand their psychical phenomena, together with the hidden laws of the exercise of thought. The learned and illustrious Ribot has justly said that psychology, dissociated from physiology and cognate sciences, is extinct, and that in order to bring it to life it is necessary to follow the progress and methods of all other contemporary sciences.* The genesis of myth, its development, the specification and integration of its beliefs, as well as the several intrinsic and extrinsic sources whence it proceeds, will assign to it a clearer place among the obscure recesses of psychical facts; they will reveal to us the connection between the facts of consciousness and their antecedents, between the world and our normal and abnormal physiological conditions; they will show what a complex drama is performed by the action and reaction between ourselves and the things within

* "Although it (psychology) still makes some show, yet the old psychology is condemned. Its conditions of existence have disappeared in its new environment. Its methods no longer suffice for the increasing difficulties of the task and the larger requirements of the scientific spirit. It is constrained to live upon its past. Its wisest representatives have vainly attempted a compromise, loudly asserting that facts must be observed, and that a large part should be assigned to experience. Their concessions are unavailing, for however sincerely meant, they are not actually carried out. As soon as they set to work the taste for pure speculation again possesses them. Moreover, no reform of what is radically false can be effectual, and ancient psychology is a bastard conception, doomed to perish from the contradictions which it involves." — Ribot, *Psychologie Allemande Contemporaine.*" Paris, 1879.

us, and also will declare the nature of the laws which govern the various and manifold creation of forms, imaginations, and ideas, and the artificial world of phantasms derived from these. In this way myth will appear to be not merely due to the direct animation of things, varying in our waking state with the nature of the exciting cause; but it also arises from the normal images and illusions of dreams, and from the morbid hallucinations of madness, both subjectively in the case of the person affected by them, and objectively for those who observe the extrinsic effects in gesture and speech, and the whole bearing of the sufferer.

Every one must admit that all these phenomena, and the beliefs which arise from them, must tend to make the observation of psychical life more easy, just as morbid psychical phenomena often explain the natural action of such life under normal conditions. These phenomena, so closely connected with physiological disturbances which are beyond the control of our personal will, will inform us of the biological relations between consciousness and thought on the one side, and our organism on the other.

The mythical faculty, as we shall see in the following chapters, combined with physiological excitements, both normal and abnormal, generally assumes constant forms in the various and manifold world of its creation; constant forms which conversely also reveal those of the scientific faculty. In this way the

development, composition, and integration of a myth, into which others are fused by assimilation, may be said to explain to us the mode in which systems of philosophy are constituted, and to manifest to us in a fanciful way the underlying mode in which human thought is exercised.

Nor do the effects and importance of these studies end here; they are also the necessary foundation of true and rational sociology. In fact, the relations of the individual to the world, the manifold conditions caused by the relations of persons to each other, the constitution of all social order, and the various modifications of that order; all these are resolved into the primitive thought, and into the emotional impulses of mythical prejudices and fancies, and in these they have also their natural sanction, and the cardinal point on which they rest and revolve. There is no society, however rude and primitive, in which all these relations, both to the individual and to society at large, are not apparent, and these are based on superstitious and mythical beliefs. Take the Tasmanians, for example, one of the peoples which has recently become extinct, and regarded as one of the most debased in the social scale, and we have in a small compass a picture of the acts and beliefs to be found in their embryonic association.

In every society, however rudimentary, these are held to be important facts: the birth of individuals, which is their entrance into the society itself, and

into the possession of its privileges; marriages, funerals, reciprocal obedience between persons and classes, or to the chief; public assemblies, and the existence of powers equal or superior to living men.

Among the Tasmanians, the placenta was religiously venerated, and they carefully buried it, lest it should be injured or devoured by animals. If the mother died in childbirth her offspring was buried alive with her. When a man attained puberty, he was bound to submit to certain ceremonies, some of them painful, and dictated by phallic superstitions. Funeral rites were simple: the corpse was either burnt, with howls and superstitious functions, or it was placed in the hollow trunk of a tree in a sitting position, with the chin supported by the knees, as was the custom with Peruvian mummies; and the belief in another world prompted them to place the weapons and utensils used during life beside the corpse. Sometimes a wooden lance, with fragments of human bones affixed to it, was placed below the tumulus, as a defence for the dead during his long sleep. It appears from these customs, and from others mentioned by Clarke, that they had a vague idea of another life, holding that the shades went up to inhabit the stars, or flew to a distant island where they were born again as white men. These beliefs were necessarily connected with the rites which they fulfilled when living, and served as a kind of obscure sanction for them.

Milligan and Nixon tell us that the Tasmanians believed in the existence of evil and sometimes of avenging spirits, destroyers of the guilty. They supposed that the shades of their friends or enemies returned, and caused good or evil to befal them; and according to Milligan there were four kinds of spirits. Purely superstitious rites were used for marriage. Old women and witches were often the arbiters of peace and war between the tribes, and they had the right of pardoning. Sorcerers intervened in many social acts, and before beginning their operations and incantations they revolved the mysterious *Mooyumkarr*, an oval piece of wood with a cord, which was certainly connected with phallic superstitions. Bonwick asserts that on many private and public occasions, the more skilled sorcerers called up spirits with appropriate ceremonies and formulas. They were powerful, and produced diseases, and were able to exert malign influence, and the urine of women, human blood, and ashes were superstitiously used as remedies against their spells.

The Tasmanian who wished to hurt or bewitch any one, procured something belonging to his enemy, and especially his hair; this was enveloped in fat and then exposed to the action of fire, and it was thought that as it melted, the man himself would waste away. They feared lest the evil spirit evoked by the enchantments of an enemy might creep behind them in the night to steal away the renal fat, an

organ with which various physiological superstitions were connected. They believed that stones, especially certain kinds of quartz crystals, were means of communication with spirits, with the dead, and also with absent persons. A woman often wore round her neck the phallus extracted from the body of her dead husband. The movements of the sun and moon, and some of their phases, had a mythical bearing on various social acts, or on the date of their assemblies, since the sun was the object of great veneration; and the full moon, the epoch of assemblies, was celebrated with feasting and dancing. Dances of many different kinds were connected with traditional myths, astrological superstitions, and the phallic worship. Some remains of circular buildings and concentric compartments, discovered by Field and others, had reference to their feasts, assemblies, and dances. Among their cosmic myths, Milligan has preserved one relating to the double stars which perhaps refers to the invention of fire.

From this cursory view of the conditions of society in its simplest form, and among the most savage peoples, and of the mythical beliefs which prevailed under such conditions, it clearly appears how myth, dating from the first beginnings of human association, has regarded, invested, sanctioned, and generated all special acts and relations, and the whole social order, both private and public. The exercise of thought in primitive times not only consisted of

mythical beliefs and associations, but this same condition of thought reacted on all the phenomena of nature, and on all social facts. For if, as we have already observed, more rational empirical notions, and a certain rude form of scientific faculty made its appearance amid those mythical ideas which were still persistent, its various forms were not animated, sustained, and preserved by myth. Hence it is evident that the basis of the genesis of sociology as a whole consists in myth, which sanctions its acts and establishes their relations to each other. The immense importance of these studies, even for the right understanding of the laws and historical evolution which guide and govern sociology, is evident from this fact.

It must not be supposed that such a vast and profound incarnation of myth in social facts is peculiar to the primitive ages; it persists and is maintained in all the historical phases of civilization, even of the higher races, although sometimes in a dormant form. Even in our days, any one who considers our modes of society, the organism, customs, ceremonies, and manifold and complex institutions of modern life, will readily see that religious influences and their rites initiate, sanction, and accompany every individual and social fact, although civil and religious societies are becoming ever more distinct.

Since, therefore, myth is a constant form of sociology, completely invests it, and accompanies and animates its transmutations down to our days, every-

one must recognize the necessity of this study in order to understand and explain the true history of thought and of sociology.

The energy, the power, the physical and intellectual worth of a people are revealed as a whole in its mythical products, whether in the quality and greatness of their beliefs, in the greater or less definiteness of their system, or in their development into more rational notions; and from the complex whole we can estimate the worth of their civilization. So that, where other extrinsic testimony is wanting, the study of these primitive creations will reveal to us their psychological worth. This is the origin of the comparative psychology of peoples, a most fruitful science, which not only teaches us to rank the various families of peoples according to their relative value, but it is of great use in making man acquainted with himself, and with psychology in general.

In fact, modern psychology can only advance by means of observation and experiment, which constitute it one of the natural sciences; and this is abundantly proved by the modern English schools, and the experimental school in Germany. Yet observation of the states of consciousness taken alone is defective, unless it is enlarged by the comparative examination of a greater number of subjects; nor must ethnical peculiarities be passed over, and it is precisely these which are included in the comparative psychology of peoples. The large amount of results,

their infinite variety, and at the same time a certain uniformity in their modes of beginning, of their development, and of their place in the universe, give a splendid illustration of the innate exercise of human thought; the likenesses as well as the contrasts are instructive as to its real nature.

The comparative psychology of peoples, studied from this point of view, certainly does not include the whole of psychological science, which requires other instruments and other modes of experience, but it is a great help as a foundation. We believe that the study of myth, which throws so much light on comparative psychology, is likewise of use for the special psychology of man, since this can only arise from individual and ethnical observation, and from experiment, dissociated from every hindrance, and from metaphysical prejudice. And if by our humble essay we can throw any light on this noble science, we shall be abundantly rewarded.

CHAPTER II.

ANIMAL SENSATION AND PERCEPTION.

All animals communicate with each other and with the external world through their senses, and by means of their perception, both internal and external, they possess knowledge and apprehension of one another. In the vast organic series of the animal kingdom, some are better provided than others with methods, instruments, and apparatus fit for effecting such communication. The senses of relation are not found in the same degree in all animals, nor when such senses are the same in number are they endowed with equal intensity, acuteness, and precision. But the fundamental fact remains the same in all cases; they communicate with themselves and with the external world through their senses.

We must now inquire what value the external object of perception, considered in itself, has for the animal, what character it has and assumes with respect to his inner sense in the act of perception or apprehension. Man, and especially man in our

days, after so many ages of reflection, and through the influence of contemporary science, is so far removed from the primitive and simple exercise of his psychical life, that he finds it difficult to picture to himself the ancient and spontaneous conditions under which his senses communicated with the world and with himself. And therefore, without further consideration, he thinks and believes that in primeval times everything took place in the same way as it does at present, and, which is a still greater error, as it takes place in the lower animals.

This identification of the complex machinery of human perception with that of animals must not be regarded as an absurd paradox, since, as we have shown in an earlier work, they were originally and in themselves the same.* By pursuing an easy mode of observation, divested of prejudice, we may revert to that primeval state of human nature, and may also comprehend with truth and certainty the condition of animals. For the animal nature has not ceased to exist in man, and it may be discerned by those who care to look for it; and careful study, with the constant aid of observation and experiment, will reveal to us the hidden life of sensation and intelligence in the lower animals.

There is a continual self-consciousness in all animals; it is inseparable from all their internal and

* *Della legge fondamentale della intelligenza nel regno animale* Milano. Dumolard, 1877.

external acts, from every fact, passion, and emotion; and this is clear and obvious. This fundamental and persistent self-consciousness—persistent in dreams, and even in the calmest sleep, which is always accompanied by a vague sensation—is the consciousness of a living subject, active, impressionable, exercising his will, capable of emotions and passions. It is not the consciousness of an inert thing, passive, dead, or extrinsic; for animal life consists in sensation of greater or less intensity, but always of sensation. Consequently, such a consciousness signifies for the animal a constant apprehension of an active faculty exercised intrinsically in himself, and it makes his life into a mobile drama, of which he is implicitly conscious, of acts and emotions, of impulses, desires, and suspicions.

This inward form of emotional life and psychical and organic action, into which the whole value of personal existence is resolved, may be said to invest and modify all the animal's active relations to the external world, which it vivifies and modifies according to its own image. The subsequent act of doubling the faculties which takes place in man does not occur in the animal; a process which modifies through the intellect the spontaneous and primitive act. Consequently, the active and inward sense which is peculiar to the animal is renewed in him by the external things and phenomena of nature which stimulate and excite him.

Two kinds of things present themselves to his perception: other animals, of whatever species, and the inanimate objects of the world. As far as the other animals are concerned, which are obvious to his perception, it is perfectly evident that upon these he will project his whole internal life of consciousness and emotions, and will feel their identity with himself by his implicit and intuitive judgment. And in fact, the movements, sounds, gestures, and forms of other animals necessarily cause this sense of inward psychical identity, whence arises the implicit notion of an animated and personal subject. Any one who observes, however superficially, the conduct of animals to each other when they first meet, cannot doubt this truth for an instant.

Although the external form and character of the animal perceived are important factors of the implicit notion of an animated personal subject, this belief is even more due to the animal's inward consciousness of himself as a living subject which is reflected in the extrinsic form of the other and is identified with it. The spontaneous and personal psychical effort does not decompose the object perceived into its proper elements by means of reflex attention, but it is immediately projected on those phenomena which assume a form analogous to the sentient subject.

The fact of this law must never be forgotten in the analysis of animal intelligence and sensation.

All those who do not keep clearly in view the real and genuine character of the sentient and intelligent faculty in animals are liable to error.

In addition to the perceptions we have mentioned, animals have a perception of inanimate things, that is, of various bodies and phenomena of nature. Although the form, motion, and gestures of an analogous and personal subject are wanting in these cases, so that they do not cause extrinsically the same implicit idea, neither do they remain, as with a cultivated and rational man, things and qualities of independent existence, disconnected with the life of the animal which perceives them, exerting no intentional efficacy, and governed by necessary laws by means of which they act and exist.

A cultivated and rational man, by the reflex and calm examination of things, can correctly distinguish these two classes of subjects and phenomena, and cannot as a rule be deceived as to their real and relative value with respect to them and to himself. But when he forgets his primary intellectual condition, and does not perfectly understand the permanent condition of animals, he believes that their faculties are identical, and that things, qualities, and phenomena present the same appearance to the human and the animal perception. Yet the actual nature of the thing, so far as it is estimated by our perception as an object different from ourselves and from any other animal, cannot be so apprehended by animals which

lack the analytical faculty in the perennial flow of their perceptions; the actual and inanimate thing is presented to them only by the intrinsic, peculiar, personal, and psychical quality of the animal itself.

If form, and characteristic and deliberate action, are wanting to the substances and phenomena of inanimate nature, qualities which more readily arouse in animals the idea of a subject resembling and analogous to themselves, yet there always remains the apprehension of some sort of form in which—not distinguished from the others by reflex action—the inward faculty of sensation and emotion is repeated and impersonated by the perceiving animal. Thus every form, every object, every external phenomenon becomes vivified and animated by the intrinsic consciousness and personal psychical faculty of the animal itself. Every object, fact, and phenomenon of nature will not merely appear to him as the real object which it is, but he will necessarily perceive it as a living and deliberating power, capable of affecting him agreeably or injuriously.

Every one is aware of the jealous, suspicious nature of animals, and that they are not only inquisitive about other animals, but about every material object which they see unexpectedly, which moves in an unusual way, or which interferes with or injures them.

It must have been often observed how they turn against any object which has chanced to hurt them,

or which has annoyed them by regular and repeated motions, how they start at the sudden appearance or oscillation of some unlooked-for thing, at an unusual light, a colour, a stone, a plant, at the fluttering of branches, of clothes, or weathercocks, at the rush of water, at the slightest movement or sound in the twilight, or in the darkness of night. They look about, and consider all things and phenomena as subjects actuated by will, and as having an immediate influence on their lives, either beneficent or injurious.

Undoubtedly they do, as a rule, by means of their implicit judgment, distinguish animals as of a different type from other objects, but they transfuse into everything their own personality and their intrinsic consciousness. This is the case with the whole animal kingdom, at least with those whose internal emotion can be gathered from their external movements and gestures.

An animal is sometimes aware that an enemy which may lie in wait for and destroy him has approached the neighbourhood of his haunts, or at any rate may interfere with the freedom of his ordinary life, and he withdraws as far as he can from this new peril or injury, and seeks to defend himself from the malice of his enemy by special arts. In this case, the external subject or thing is what his own objective sense conceives it to be, and his inward perception corresponds to an actual cosmic reality.

Suppose that instead of this, the neighbourhood of a fierce fire, or violent rain and hail, or a stormy wind, or some other natural phenomenon, surprises or injures such creatures; these facts do not affect them as if they were merely occurrences in accordance with cosmic laws, for such a simple conception of things is not grasped by them. Such phenomena of nature are regarded by animals as living subjects, actuated by a concrete and deliberate purpose of ill-will towards them. Any one who has observed animals as I have done for many years, both in a wild and domestic state, and under every variety of conditions and circumstances, will readily admit the fact.

This truth, which clearly appears from an accurate analysis of facts, and from experiments, can also be demonstrated by the arguments of reason. Since animals have no conception of the purely cosmic reality of the phenomena and laws which constitute nature, it follows that such a reality must appear to their inner consciousness in its various effects as a subject vaguely identical with their own psychical nature. Hence they regard nature as if she were inspired with the same life, will, and purpose, as those which they themselves exercise, and of which they have an immediate and intrinsic consciousness.

It is true that after long experience animals become accustomed to regard as harmless the phenomena, objects, and forces by which they were at first sympathetically excited and terrified. Of this

we have innumerable examples both among wild and domestic animals; but although suspicion and anxiety are subdued by habit and experience, yet these objects and phenomena are not thereby transformed into pure and simple realities. In the same way, if they are at first frightened by the sight and companionship of some other species or object, habit and experience gradually calm their fears and suspicions, and the association or neighbourhood may even become agreeable to them. I have often observed that different species, both when at liberty and in confinement, are affected by the most lively surprise and perturbation when some new phenomenon has startled them; they act as if it were really a living and insidious subject, and then they gradually become calm and quiet, and regard it as some indifferent or beneficent power.

I must adduce some observations and experiments from the many I have made on this subject. It may be objected that if animals in their spontaneous perception personify the object in question, they would give signs of this fact with respect to all the objects with which they come in contact, and among which they live, and yet they remain indifferent to many of them, which is a proof that they distinguish the animate from the inanimate. In fact it cannot be disputed that a vast number of the phenomena and objects of nature are regarded by animals with indifference; they are perceived by them, but it does

not appear that they suppose these things to be endowed with life. It is, however, necessary in the first place to distinguish two modes and stages in this animation of things, one of which we may term static, and the other dynamic. In the first instance, the sentient subject remains tranquil at the very moment when he vivifies the phenomenon or the thing perceived; while the act is accomplished with so much animating force, and with an implicit and fugitive consciousness, it exerts no immediate and sudden influence on the perceiving animal, and consequently he gives no external signs of the personifying character of his perception. In the second instance, which we have termed dynamic, that is, when the phenomenon or object has a direct and sudden effect on the animal himself, he expresses by his movements, gestures, cries, and other signs, how instantaneously he considers and feels the object in question to be alive, for he behaves in exactly the same way towards real animals.

Animals are accustomed to show such indifference towards numerous objects that it might be supposed that they have an accurate conception of what is inanimate; but this arises from habit, from long experience, and partly also from the hereditary disposition of the organism towards this habit. But if the object should act in any unusual way, then the animating process which, as we have just said, was rendered static by its habitual exercise, again becomes

dynamic, and the special and permanent character of the act is at once revealed. We have experience of this fact in ourselves, although we are now capable of immediately distinguishing between the animate and the inanimate, and man alone has, or can have, a rational conception of what are really cosmic objects or things. Yet if we suddenly and unexpectedly see some object move in a strange way, which we know from experience to be inanimate, the innate inclination to personify it takes effect, and for a moment we are amazed, as if the phenomenon were produced by deliberate power proper to itself.

I have kept various kinds of animals for several years, in order to observe them and try experiments at my convenience. I have suddenly inserted an unfamiliar object in the various cages in which I have kept birds, rabbits, moles, and other animals. At first sight the animal is always surprised, timid, curious, or suspicious, and often retreats from it. By degrees his confidence returns, and after keeping out of the way for some time, he becomes accustomed to it, and resumes his usual habits. If then, by a simple arrangement of strings already prepared, I move the object to and fro, without showing myself, the animal scuttles about and is much less easily reconciled to its appearance. I have tried this experiment with various animals, and the result is almost always the same.

In the cage of a very tame thrush, I made a

movable bottom to his feeding trough, so arranged that by suddenly pulling a cord, the food which it contained could be raised or lowered. When everything remained stationary in its place the thrush ate with lively readiness, but as soon as I raised the food he nearly always flew off in alarm. When the experiment had been often repeated, he did not like to come near the feeding trough, and—which is a still stronger proof that he imagined the food itself to be endowed with life—he often refused to approach, or only approached in fear the sopped bread which was placed outside the trough. I tried the same experiment with other birds, and nearly always with the same result.

On another occasion I repeatedly waved a white handkerchief before a spirited horse, bringing it close to his eyes; at first he looked at it suspiciously and shied a little, but without being much discomposed, and I continued the experiment until he became accustomed to its ordinary appearance. One day I and a friend went out driving with this horse, and I directed a man, while we were passing at a moderate pace, to wave the same handkerchief, attached to a stick, in such a way that his person on the other side of the hedge was invisible. The horse was scared and shied violently, and even in the stable he could not see the handkerchief without trembling, and it was difficult to reconcile him to the sight of it. I repeated the experiment with slight variations on other

horses, and the issue was always more or less the same.

Again, I placed a scarecrow or bogey in a parti-coloured dress in the spacious kennel of a hound while he was absent from it. When the dog wished to return to his kennel, he drew back at the sight of it, and barked for a long while. After going backwards and forwards, snuffing suspiciously, he decided to enter, but he remained on the threshold of the kennel, anxiously inspecting the bogey. In a few days, however, he became accustomed to it, and was indifferent to its presence. I ought to add that I had taught him on the first day, by punishment and admonition, that he must not destroy the bogey. One day when the dog was lying down I violently moved the puppet's arms by a cord, and he jumped up and ran barking out of the kennel, soon returning to bark as he had done at first. Finally, he again became accustomed to it, but whenever I repeated the movement with greater violence, it took a long while for him to become reconciled to it.

I put into a room various kinds of wild birds, which had been taken in nets after they were full grown. The window, which looked upon a garden, was unglazed, and closed by a wire netting, through which the outer air entered and was constantly renewed. I placed in the middle of the room a pot containing a shrub of some size, on which the birds used to perch. Since they had been reared in the

open air they were certainly accustomed to the wind, and to the way in which it moves trees and branches, so that they were not alarmed by a phenomenon which they recognized from experience. I fastened a cord to the head of the shrub which I passed through a hole in the door, making another to look through, and in this way I moved it to and fro as the wind might have done. One day when there was a high wind which could be heard in the room, and when the current of air through the window was perceptible, I tried the experiment when the conditions of resemblance were perfect. And yet when the violent movement and oscillation of the shrub was combined with the noise of the wind, the frightened birds all fluttered about, and after repeating the movement, and then allowing it to subside, they kept away from the shrub and did not dare to settle on it.

At another time, aided by an ingenious young friend, I constructed a toy windmill, of which the vanes were moved by weights. I placed this toy in a cage, so arranged that its motions could be regulated from the outside, and I put into the cage a sparrow, which had been taken from the nest, and which consequently had no experience of the external world. Much patience was needed, since the toy required careful adjustment and was easily thrown out of gear, but I managed it at last. The sparrow pecked at the little mill as soon as he was put into the cage,

and he grew up accustomed to its motions. I then took the sparrow out of the cage and put in a finch, which had also been taken from the nest, but was reared far from such a machine, and he was frightened and did not reconcile himself to it for some time. I exchanged this bird for a goldfinch which had been caught after he was full grown, and his alarm at the little mill was so great that he did not dare to move.

In a ground floor room which I used as my study, I hung an old sheet, which reached to the ground, on a long spear inserted in a heavy wooden disk; I surmounted it with a ragged hunting cap, and so arranged the sheet as to give it some resemblance to the human form. When my dog came in as usual, he looked suspiciously at the object, snuffing about and gradually approaching to walk round and observe it. At last he was satisfied, and curled himself up by the skirts of the bogey, where I had placed the mat on which he was accustomed to lie when he was with me. One evening when the moon shone doubtfully and there was just light enough to distinguish the outline of things, I carried the shapeless bogey into the garden near my room, and placed it among some shrubs and bushes. I went back to the house and called my dog, who followed me quietly until he reached the spot from which he could see the bogey distinctly enough for him to recognize its identity with the one with which he was already familiar. As soon as he saw

the apparition he stood still, growling furiously; he began to bark, and when I encouraged him to come on, he turned round and ran back to the house. I shut up the dog in another room, brought back the bogey to its former place, and threw a strong light upon it before recalling the dog. At the first sight of the bogey the dog paused suspiciously for an instant, but when I sat down to the table as usual, he hesitated a little and after snuffing at it went back to his couch.

I have made similar experiments with dogs, rabbits, birds, and other animals. I took long wooden poles, and put them inside their cages or hutches in such a way that the animals got to know and feel reconciled to the sight of them. After some days had elapsed, I contrived, while screened from sight, to take the poles from their usual place and to make them touch and annoy the animals with more or less violence, thus causing them to flutter or scamper about and to shrink away, as if from the touch of a living person, although they were unable, as I have said, to see me or my hand. Those which were least agitated sprang forward with little leaps and looked about them, doubtful and excited. I might go on to describe many other experiments made with the same object, and always with the same result, but these are enough to show that I went to work cautiously and conscientiously, that the spontaneous and innate personification of the objects

perceived by animals is clearly apparent, and also how we may account for their indifference to those to which they become accustomed.

Among animals the necessity of finding food is the great and unfailing stimulus towards the exercise of their vital functions; food which may, as we all know, be vegetable, animal, or a combination of both kinds. It is evident that in the case of carnivorous animals the object which satisfies this desire is a living subject, of which it is necessary to become possessed by arts, wiles, sometimes by a fierce and cruel conflict. In these cases, animals are in constant communication with an animal world resembling their own, and the objective reality is for the most part resolved into living subjects, endowed with consciousness and will. But neither is the vegetable food of herbivorous, frugivorous, and graminivorous animals regarded by them, as it is by us, as a material and unconscious satisfaction of their wants; these grasses, grains, and leaves appear to animals to be living powers which it is necessary to conquer, animated subjects endowed with life, but for the most part inoffensive, and which, unlike the living prey of carnivora, offer no resistance.

Observe the way in which an herbivorous or graminivorous animal becomes excited and angry when the branch or the ear of corn obstinately adheres to the ground, or offers any other difficulty to his immediate desire of obtaining food; he acts like one who has to

do with a resisting power. Observe how, when they are quietly stripping the bough, picking out the grains, or eating the grass, they become suspicious, or fly away if there should be any unusual movement in the bough, the ears of corn, or the grass. In one way or another their food is regarded as a subject endowed with sympathetic and deliberate consciousness. And every one must have observed that animals at play act towards inanimate objects as if they were conscious and endowed with will.

Every object of animal perception is therefore felt, or implicitly assumed, to be a living, conscious, acting subject. This is due to the external reflection and projection of the intrinsic and sentient faculty, and therefore—since an animal has not the duplex faculty of deliberate and reflex attention—he cannot attain to the conception of simple external reality, of cosmic things and phenomena. Every object, every phenomenon is for him a deliberating power, a living subject, in which consciousness and will act as they do in himself. There are undoubtedly in the vast series of beings which compose the order of nature, and which he is able to perceive, degrees, differences, and varieties of energy, power, and efficacy with respect to himself and to the normal exercise of his life. But he transfuses into all, in proportion to the effects which result from them, his own nature, and modifies them in accordance with the intrinsic form of his consciousness, his emotions, and his instincts.

The external world appears to animals to be a great and mighty movement and congeries of living, conscious, deliberating beings, and the value of the phenomenon or thing is great in proportion to its effect on the animal itself. The objective and simple reality, as it appears to man, has no existence for animals; from the nature of their intelligence they cannot attain to any explicit conception of it, so that this reality is resolved and modified into their own image. The eternal and infinite flux, by which all things come and go in obedience to laws which are permanent and enduring, appears to animals to be a vast and confused dramatic company in which the subjects, with or without organic form, are always active, working in and through themselves, with benign or malignant, pleasing or hurtful influence. It is for this reason, and this reason only, that their life of consciousness and of relation is so deeply seated and so readily excited. Nor do animals ever believe themselves to be alone among inanimate things; even when not surrounded by allied or different species, they have the sense of living amid the manifold forms of conscious and deliberating life which the world contains.

This constant and deliberate animation of all the objects and phenomena of nature is spontaneous and necessary owing to the psychical and organic constitution of the animal kingdom, and it resolves itself into a universal personification of the phenomena themselves. In fact, the animal's intrinsic psychical

personality is infused and transformed into each of them with more or less intensity and vigour; the phenomena are perceived by each individual just as far as he assimilates them, and he is constantly assimilating himself to them. His communication with the external world is in proportion with its internal reflection on himself, and he understands just as much as his own nature enables him to grasp.

A careful consideration therefore shows that the conditions of animal knowledge consist in endowing the phenomena and objects of nature with consciousness and will. I think that this truth will prove a certain guide and beacon in the interpretation of the origin of myth and science in man.

CHAPTER III.

HUMAN SENSATION AND PERCEPTION.

In man, as it has been clearly proved, sensations and perceptions occur both physiologically and psychically just as they do in animals. If science and the rational process of the interpretation of things have their origin and are evolved in us by the duplication of our faculties, such a function, which is due to this duplication, is very slowly developed and exercised, and in its origin, as an effort of the intelligence, it does not differ from that of animals.

It is true that the internal act of the higher faculty of reflection has hardly taken place before man unconsciously enters on a new and vast apprenticeship, which soon distinguishes him from and exalts him above the animal kingdom; science has already put forth its first germ. But the reasoning and simply animal faculties were so mingled, that for a long while they were confounded together in their effects and results, as well as in their natural methods. We must therefore begin by considering

the nature of this primitive human perception, in some degree identical with that of animals, so that they may be estimated to be of equal value, at any rate in their first results and arts.

The vivid self-consciousness, inseparable at all times from every act, passion, and emotion, actuates man and animals alike; he has this consciousness in common with all other animals, and especially with those superior orders which are nearest to himself. The further perception of extrinsic things and phenomena occurs after the same manner and in accordance with the same physiological and psychical laws. By the intrinsic law of animal nature, as it is adapted to his cosmic environment, we see the cause and necessity of the transfusion and projection of himself into everything which he perceives; whence it follows that he regards these things as living, conscious, and deliberating subjects; and this is also the case with man, who animates and endows with life all which surrounds him and which he perceives.

In fact, in man's spontaneous and immediate perception and apprehension of any object or external phenomenon, especially in early life, the innate effects are instantaneous, and correspond with the real constitution of the function; analysis and reflex attention necessarily and slowly succeed to this primitive animal act in the course of human development. Consequently the true character and value of its effect on the perception are the same in man and animals.

If in this psychical and organic fact of perception, man is at first absolutely in the conditions of animals, identical effects must be produced; and this was originally the case, as far as man himself and external things were concerned. The powerful self-consciousness which actuates man and animals alike is projected on the objects or phenomena perceived, and they see them transformed into living, deliberating subjects. In this way the world and all which it contains appears to be a congeries of beings, actuated by will and consciousness, and powerful for good or evil, and in practice they seek to modify, to encourage, or to avoid such influence. The ultimate effect of this action, assumed to be intentional in all and each of these subjects, will be their personification, either vaguely or definitely, but always as a power active for good or ill.

If we trace back the memories of historic and civilized peoples into the twilight of their origin, at a time when they were still barbarous, and little removed from their primitive savage conditions, we shall find, the further we go back, the more vivid, general, and multiform will the mythological interpretation and conception of the world and its various phenomena appear to be; everything was personified by these primitive peoples in a way common to the animal and human consciousness alike.

Of this the testimony remaining in the most ancient verses of the first Veda is a sufficient proof.

At the epoch of their composition the human race had made some relative progress in morals and civilization; yet we find that psychical human life was transfused and projected into everything: man personified each phenomenon and force of nature in accordance with his own image.

For example, fire in general was personified and identified with humanity in *Agni;* even the shape taken by the flames, all which was required to light the fire, the whole process of the sacrifice, even the doors of the altar-railing, the prayer and oblation to the god.*

We also learn from the solemn and ancient songs of the Rig-Veda that all terrestrial, meteorological, and celestial phenomena were more or less vaguely personified. These facts recur in all the earliest recollections of civilized peoples. If we turn from these to observe the savage races of modern times, and the most barbarous tribes still extant in continents and isles far removed from culture and science, we shall again find the same beliefs. The range of absurd personifications, degenerating into the most trivial and varied forms of fetish worship, becomes wider, and its influence deeper, in proportion to the rude and barbarous condition of the tribe or stock in which they appear.

* See, among other works on the subject, *Die Herabkunft des Feuers und des Göttertranks*, by Adalbert Kuhn; and *Croyances et Légendes de l'Antiquité*," by A. Maury.

Even among ourselves, in the midst of the most civilized European nations of modern times, how much mythology still lingers in the lower classes, both in cities and the country. It flourishes in proportion to the ignorance and want of culture of the people, as those know who have really studied the intellectual conditions of all classes in our time.*

In the child just beginning to walk, to move freely, and to talk, and even at a later age, in cases in which the reflective faculty is weak, and when it approximates more to the psychical and organic conditions of animals, such a projection of self and personification of surrounding objects is evident to all. For this reason a child transforms all which it seizes or plays with into a person or animal, and when alone with them it talks, shouts, and laughs, as if such objects could really feel, act, and obey; in short, as if they were real persons or animals. So strong is the childish instinct, or, as I might say, the law of its being to project and transfuse itself into objects, that it is apt to speak of itself in the third person. A child seldom says, "I will," or "I am hungry," but "Louis wants," "Louis is hungry," or whatever his name may be. This phenomenon reappears in the second childhood of old age, when the power of reflection is weakened, and there is a reversion to the primitive animal condition. The

* See Wuttke, *Deutscher Volksaberglauber;* Tylor, *Primitive Culture;* Hanusch, Rochholz, and others.

same phenomenon also occurs in idiots, in whom there is a morbid defect of reflective power.

This fact of the personification of the objects of perception is therefore evident and constant in the primitive man of civilized races, in the barbarous condition of modern savages, in the ignorant multitude, and in children—intellectual conditions which approach most closely to the condition of animals —and conversely it is plain that it belongs in the highest degree to the intellectual life of animals, and that myth, into which such a personification and animation of things must be resolved, has its original and innate necessity in animal life. We think that this is a new scientific fact, which throws much light on the history of human thought.

M'Lennan observes, "Some explanation of the phenomena of life a man *must* feign for himself; and to judge from the universality of it, the simplest hypothesis, and the first to occur to men, seems to have been that natural phenomena are ascribable to the presence in animals, plants, and things, and in the forces of nature, of such spirits prompting to action as men are conscious they themselves possess." * This fact, indicated by M'Lennan and by all who have devoted themselves to anthropo-

* *The Worship of Animals and Plants*, Part I. *Fortnightly Review*, 1869. The same argument is generally used; see Tylor, *Early History of Mankind*, 1865; Lubbock, *Origin of Civilization*, 1870; Herbert Spencer, *Fortnightly Review*, May, 1870; Waitz, *Anthropologie der Naturvölker;* Bastian, *Mensch in der Geschichte.*

logical researches with respect to the origin of religions, and of myth in general, is now recognized as certain; but it seems to me that the interpretation and explanation of it are altogether implete. They suppose it to be simply the effect of psychological laws as far as man is concerned, whereas we have shown that it forms, in the ultimate causes by which it is produced, the very essence of animal perception. They ascribe it to man as a rational hypothesis to explain the primitive order of things, whereas it is a spontaneous and primary intuition of the animal intelligence.

Alger, although he is also mistaken as to the true causes of myth in general, expresses himself better when he asserts that the brain of a savage is always dominated by the idea that all objects whatsoever have a soul precisely similar to that of man. The custom of burning and burying various things with the dead body was, he thinks, in many cases prompted by the belief that every such object had its *manes*.*

In fact, the innate psychical and organic constitution of the intelligence, both animal and human, is such that it spontaneously and necessarily projects itself into every object of nature and perception, animating and personifying it by this special law, and not by a reflective hypothesis, such as would be the conscious and deliberate solution of a given pro-

* See Alger's *Critical History of the Doctrine of a Future Life.*

blem. Such a solution cannot be made by animals, since as we have shown they are without the faculty of making a deliberate research into any subject; nor can it be effected by the primitive man, in whom the reasoning faculty with which he is endowed is still undeveloped.

The real origin of reflection is not to be found in what may be called the mythical creation of nature, which is the necessary result of the spontaneity of the intelligence, both in man and animals; it is developed after long duration of barbarism and ignorance. M'Lennan and others have shown how the era of reflection and hypothesis begins in the evolution of human intelligence. Sekesa, an intelligent Kaffir, said to Arbrousset,* "For twelve years I have shepherded my flock. It was dark, and I sat down upon a rock and asked myself such questions as these, sad questions, since I was unable to answer them. Who made the stars? What supports them? Do the waters never grow weary of flowing from morning to evening, from evening to morning, and where do they find rest? Whence come the clouds, which pass and re-pass, and dissolve in rain? Who sends them? Our diviners certainly do not send rain, since they have no means of making it, nor do I see them with my eyes going up to heaven to seek it. I cannot see the wind, and know not what it is. Who guides and causes it to

* Arbrousset, *The Basutos.*

blow, to rage, and overwhelm us? Nor do I know how the corn grows. Yesterday there was not a blade of grass in my field, and to-day it is green; who gave to the earth the wisdom and power to bring forth?" Again, there is a passage in the Rig-Veda, in which it is said, "Where do the fixed stars of heaven which we see by night go by day?"

It is in this intellectual condition that ignorant and savage man really begins the spontaneous yet reflective research into the causes of things, and it is in this condition only that he hypothetically interprets the order of phenomena through myths, which have then become *secondary*, and are no longer *primitive*. The true origin of the primitive myth which animates and personifies the universe is not to be found in this condition; its origin is of much earlier date in the history of man, and indeed it has its roots, as we have shown, in animal life.

Certainly when we compare the two intellectual periods, there is a wide difference between the age in which Sekesa could be perplexed by such inquiries, and that of more primitive peoples, which still believe without question in the soul and informing spirit or shade of stones, sticks, weapons, food, water, springs—in short, of every object and phenomenon. This is still the case with the Algonquins, the Fijians, the Karens, the Caribbees, the negroes of Guinea, the New Zealanders, the Tongusians, the Greenlanders, the Esthonians, the Australians, the Peruvians, and a

host of other savage and barbarous peoples. They not only animate and personify material objects, but even diseases and their remedies.

The incubus, for example, termed *Mara* in Northern mythology, was the spirit which tormented sleepers. This is the *Mar* of the German proverb: *Dich hat greitten der Mar.* The word is derived from *Mar*, a horse, and becomes *nightmare* in English, *Cauchemar* in French, Εφιάλτης in Greek, meaning one which rides upon another. So with epilepsy, which signifies the act of being seized by any one; it was, like all nervous diseases, held to be a sacred evil, and those afflicted by it were supposed to be possessed. Insanity was regarded in the same way, as we see in the Bible where Saul's melancholy is said to be an evil spirit sent from God. A furious madman was supposed to have been carried off by a demon, and in Persia the insane were said to be God's fools. In Tahiti they were called *Eatooa*, that is, possessed by a divine spirit; and in the Sandwich Isles they were worshipped as men into whom a divinity had entered. In German the *plica polonica* is called *Alpzopf*, or hobgoblin's tail. All nations believed that the malign beings which animated diseases could, like men, be propitiated by ceremonies and incantations. The Redskins are always in fear of the assaults of evil spirits, and have recourse to incantations, and to the most absurd sacerdotal rites, or to the influence of their *manitu*, in order to be

safe. Their devotions and sacrifices are prompted by fear rather than by gratitude.

Tanner mentions, in his "Narrative of a Captivity among the Indians," that he once heard a convalescent patient reproved for his imprudence in exposing himself to the air, since his shade had not altogether come back to abide within him. For this purpose, and in conformity with such ideas, when the sorcerer *Malgaco* wishes to cure a sick man, he makes a hole in a tomb to let out the spirit, which he then takes in his cap, and constrains it to enter the patient's head. The process of disease is supposed to be a struggle between the sick person and the evil spirit of sickness. The Greek word *prophylakê* signifies the arrangements of outposts. *Agonia* is the hottest moment of conflict, and *krisis* the decisive day of battle, as we see in Polybius, liii., c. 89. Medicine was from the earliest times confounded with magic, which is only the primitive form of the conception of nature. The Aryan rulers in India in ancient times believed that the savage races were autochthonic workers of magic who were able to assume any form they pleased.* The negro priests of fetish worship believe that they can pronounce on the disease without seeing the patient, by the aid of his garments or of anything which belongs to him.† The superstition of the evil eye recurs in Vedic India, as well

* Muir, *Sanscrit Texts.*

† Burton, *West Africa;* Tylor, *Primitive Culture.*

as among many other peoples. In the Rig-Veda the wife is exhorted not to look upon her husband with an evil eye. There was the same belief among the ancient Greeks, and it is also found in the *oculus fascinus* of the Romans, and the German *böses Auge*. The early German *Rito*, or fever, was a spirit (*Alb*) which rode upon the sick man. A passage in the Rig-Veda states that demons assume the form of an owl, cock, wolf, etc.* Such was the primitive attitude of the transfusion of individual psychical life into things, and consequently of general metamorphosis. Kuhn identifies the Greek verb *ἰαομαῖ* with the Sanscrit *yavayami*, to avert, and in the Rig-Veda this verb is used in connection with *amivä*, disease; so that it was necessary to drive away the demon, as the cause of sickness. A physician, according to the meaning of the old Sanscrit word, was the exorciser of disease, the man who fought with its demon. We find the practice of incantations as a remedy for disease in use among the ancient Greeks, the Romans, and all European nations, as well as among savages in other parts of the world.

The objects and phenomena obvious to perception are therefore supposed by primitive man, as well as by animals, to be conscious subjects in virtue of their constitution, and of the innate character of sensation and intelligence. So that the universal personification of the things and phenomena of

* Pictet, *Origines Indo-Européennes.*

nature, either vaguely, or in an animal form, is a fundamental and necessary fact, both in animals and in man; it is a spontaneous effect of the psychical faculty in its relations to the world. We think that this truth cannot be controverted, and it will be still more clearly proved in the course of this work.

Such a fact, considered in its first manifestation and in the laws which originally govern it in animals, and in man as far as his animal nature is concerned, assumes a fresh aspect, and is of two-fold force when it is studied in man after he has begun to reason, that is, when his original psychical faculty is doubled. The animation and personification of objects and phenomena by animals are always relative to those of the external world; that is, animals transfuse and project themselves into every form which really excites, affects, alarms, allures, or threatens them; and the spontaneous psychical faculty which such a vivifying process always produces necessarily remains within the sphere of their external perceptions and apprehensions. In a word, they live in the midst of the objective nature, which they animate with consciousness and will, and their internal power is altogether absorbed in this external transformation.

In man, in addition to this animation of the things and phenomena of the external world, another more profound and vivid animation takes place, the animation not merely of external forms, but of internal

perceptions, ideas, sentiments, and all kinds of emotions. We know that man has not only the perception of external and internal things, but also the perception of this perception. Hence the external form, or the internal sentiment and emotion, may by the dominion of his will over all the attributes of his intelligence be once more subjected to his deliberate observation and intuition; by this process the external and internal world are doubled in their intrinsic ideal, and give birth to analysis and abstraction, that is, to the specification and generalization of the things observed.

When this spontaneous faculty of man has been developed within him, his observation of the similarities, analogies, differences, and identities which are to be found in all things and phenomena, in sentiments and emotions, necessarily induces him to collect and simplify them in special forms, to combine these various intuitions in a homologous type; this type corresponds with an external or internal congeries of similar, identical, or analogous images or ideas, out of which the species and genera of the intellect are formed. In this way, for instance, arose the mental classification of trees, plants, flowers, rivers, springs, animals, and the like, as well as that of love, hatred, sorrow, anger, birth, and death, strength, weakness, rule, and obedience; in short, the generic conceptions of all natural phenomena, as well as of psychical sentiments and emotions.

Animals, for example, perceive a given plant or tree, as a thing presented at the moment to their individual consciousness, and by infusing this consciousness into the object in question, they animate and personify it, especially if its fruits or leaves are attractive, or if it is moved by the wind. We have seen that all things are necessarily personified by animals, for if they meet with any material obstacle, they do not ascribe the sudden impediment to the impenetrability of matter, or to superior force, but rather to an intentional opposition to their aim or progress. We often see that animals not only exert mechanical force to break through or destroy the material barriers intended to keep them in confinement, but they act in such a way as to show rage and fury towards a hostile and malevolent subject.

To return to our example; if an animal vivifies and animates some special plant specially presented to him, he does not go beyond this vivifying act; when he goes on his way, and no longer perceives the concrete phenomenon, the animation at the same time disappears and ceases. Man, however, by means of the classifying faculty we have noticed, after repeatedly perceiving various plants similar or analogous to the first, is able by spontaneous reflection, and by the automatic exercise of his intelligence, to refer them to a single type, and in this way the specific idea of a tree is evolved in his mind and fixed in his memory. The same thing gradually takes place with respect to

flowers, animals, springs, rivers, and the like. These ideal types are not wholly wanting even among the most barbarous peoples, in the most concrete and dissimilar languages, since without them any language would be impossible.

The same intrinsic and innate necessity which, both in man and animals, automatically effects the animation and personification of consciousness and will in the case of external objects and phenomena, also impels man to vivify and personify the specific types which he has gradually formed, and they take an objective place in his memory as the objects of nature do in the case of animals. In this way man does not, like animals, merely vivify the special oak or chestnut tree presented to him in a concrete form at a given moment, but he vivifies in the same way the psychical type of trees, of flowers, etc., which has been evolved in his mind, just as he vivifies the type of suffering, of disease, of death, of healing, or of any other force.

For this reason the process of necessary and spontaneous personification is at first two-fold; namely, the personification of individual and external objects and phenomena, and that of their specific inward types, whether of the objects themselves or of their sensations and emotions. It must be observed that at this early stage of man's history, specific types, or the classification of things, were not ordered and determined with scientific precision; they were undefined

and confused, running more or less into each other, so as to be easily lost, or constantly diverging more widely. This internal movement of images and undefined conceptions was a stimulus to active and mobile life, and an abundant source of vivid or obscure myths, and of the sentiments corresponding to them.

These specific primordial types were openly referred to external phenomena, and were based upon the life of nature, since rational or scientific ideas had not yet made their appearance, or only very sparsely. In any case, the reality of these types and their animation are facts, as all the earliest records attest, whether among civilized or savage races.

The personification of specific types, which are in general the most obvious—those, namely, which refer to animals, vegetables, minerals, and meteors, things useful or injurious to man—is the origin of the subsequent belief in fetishes, genii, demons, and spirits, and these led to the vivification of the whole of nature, her laws, customs, and forces. Man's personification of himself, his projection of himself as a living being into external things, was the result of reflection. In fact, the impersonation of the winds took place in very early times, since they most frequently and universally excited the attention and anxiety of man and animals, whether beneficially or otherwise, and by their mechanical action, their whistling and other sounds, they readily struck the

mobile fancy of primitive men, and also of savage and ignorant peoples in our day.

Just as the act of respiration is a faint wind which goes on whether in sleep or wakefulness, and only ceases with death, so it was with the phenomenon of nature which attracted their attention, and it was invested by them with life. Since the winds of nature had already been animated and personified by a spontaneous act, so our inmost being was certainly first considered as material, and impersonated as breath and air.

This appears from the roots and words of all languages; the Hebrew *nephesh*, *nshâmâh*, *ruach*—soul or spirit—are all derived from the idea of breathing. The Greek word *ἄνεμος*, the Latin word *animus*, signify breathing, wind, soul, and spirit. In the Sanscrit *âtman* we have the successive meanings which show the evolution of the myth: breathing, vital soul, intelligence, and then the individual, the *ego*. In Polynesia we find the same process of things. *To think*, which in the Aryan tongues comes from the root *c'i*, and originally meant to collect, to comprehend, in German, *begreifen*, becomes in the Polynesian language, *to talk in the belly*. It is, therefore, an evident historical fact that man first personified natural phenomena, and then made use of these personifications to personify his inward acts, his psychical ideas and conceptions. This was the necessary process, since animals were prior to man,

temporally and logically, and external idols were formed before those which were internal and peculiar to himself.*

It is true that man unconsciously, that is, without deliberation, not only animates external things and their specific types, but he also, by an exercise of memory, animates the psychical image of these special perceptions. If, for example, the primitive man personifies a stream of water which he has seen to issue from a fissure of the rocks, and ascribes to it voluntary and intentional motion, he also animates the image which reappears in his sphere of thought,

* The Hawaïans, for example, have only one term for love, friendship, esteem, gratitude, benevolence, etc. — *aloha;* while they have distinct words for different degrees in a single natural phenomenon. Thus *aneane*, gentle breeze; *matani*, wind; *pahi*, the act of breathing through the mouth; *hano*, breathing through the nose. See Hale's *Polynesian Dictionary*. All peoples have slowly attained to typical ideas, and many are even now in process of formation. Thus, the Finns, Lapps, Tartars, and Mongols, have no generic words for *river*, although even the smallest streams have their names. They have not a word to express *fingers* in general, but special words for *thumb*, *fore-finger*, etc. They have no word for *tree*, but special words for *pine*, *birch*, *ash*, etc. In the Finn language, the word first used for *thumb* was afterwards applied to fingers generally, and the special word for the bay in which they lived came to be used for all bays. See Castren, *Vorlesungen über Finnische Mythologie*. This original confusion in the definition of scientific ideas, and the successive alternations by which they were re-cast, may be gathered from the analysis of language, and from facts which still occur among uncultured and ignorant people. When the inhabitants of Malleolo saw dogs for the first time, they called them *brooàs*, or pigs. The inhabitants of Tauna also call the dogs imported thither *buga*, or pigs. When the inhabitants of a small island in the Mediterranean saw oxen for the first time, they called them *horned asses*.

and conceives it to have a real existence. He does not merely believe it to be a psychical and what may be called a photographic repetition of the thing, but rather to have an actual, concrete existence. Thus, among all ancient peoples, and among many which are still in the condition of savages, the *shadow* of a man's body is held to be substantial with it, and, as it were, his inmost essence, and for this reason the spirits of the dead were in several languages called shades.

Doubtless it is difficult for us to picture to ourselves the psychical conditions of primitive men, at a time when the objects of perception and the apprehension of things were presented by an effort of memory to the mind as if they were actual and living things, yet such conditions are not hypothetical but really existed, as any one may ascertain for himself who is able to realize that primitive state of the mind, and we have said enough to show that such was its necessary condition.

The fact becomes more intelligible when we consider man, and especially the uneducated man, under the exciting influence of any passion, and how at such times he will, even when alone, gesticulate, speak aloud, and reply to internal questions which he imagines to be put to him by absent persons, against whom he is at the moment infuriated. The images of these persons and things are as it were present and in agitation within him; and these

images, in the fervour of emotion and under the stimulus of excitement, appear to be actually alive, although only presented to the inward psychical consciousness.

In the natural man, in whom the intellectual powers were very slowly developed, the animation and personification effected by his mind and consciousness were threefold: first, of the objects themselves as they really existed, then of the idea or image corresponding to them in the memory, and lastly of the specific types of these objects and images. There was within him a vast and continuous drama, of which we are no longer conscious, or only retain a faint and distant echo, but which is partly revealed by a consideration of the primitive value of words and of their roots in all languages. The meaning of these, which is now for the most part lost and unintelligible, always expressed a material and concrete fact, or some gesture. This is true of classic tongues, as is well known to all educated people, and it recurs in the speech of all savage and barbarous races.

Ia rau is used to express *all* in the Marquesas Isles. *Rau* signifies *leaves*, so that the term implies something as numerous as the leaves of a tree. *Rau* is also now used for *sound*, an expression which includes in itself the conception of *all*, but which originally signified a fact, a real and concrete phenomenon, and it was felt as such in the ancient speech in which it was used in this sense. So again in Tahiti

huru, ten, originally signified *hairs; rima, five,* was at first used for *hand; riri, anger,* literally means, *he shouts. Uku* in the Marquesas Isles means, *to lower the head,* and is now used for *to enter a house. Rùku,* which had the same original meaning in New Zealand, now expresses the act of diving. The Polynesian word *toro* at first indicated anything in the position of a hand with extended fingers, whence comes the Tahitian term for an ox, *puaatoro, stretching pig,* in allusion to the way in which an ox carries his head. *Toò* (Marquesas), to put forward the hand, is now used for *to take. Tongo* (Marquesas), to grope with extended arms, leads to *potongo tongo, darkness.* In New Zealand, *wairua,* in Tahiti *varua,* signifies soul or spirit, from *vai,* to remain in a recumbent position, and *rua,* two; that is, *to be in two places,* since they believed that in sickness or in dreams the soul left the body.* Throughout Polynesia *moe* also signifies a recumbent position or to sleep, and in Tahiti *moe pipiti* signifies a double sleep or dream, from *moe,* to sleep, and *piti,* two. In New Zealand, *moenaku* means, to try to grasp something during sleep; from *naku,* to take in the fingers.

We can understand something of the mysterious exercise of human intelligence in its earliest development from this habit of symbolizing and presenting in an outward form an abstract conception, thus giving a concrete meaning and material expression to the

* See Gaussin's *Langue Polynœsienne.*

external fact. We see how everything assumed a concrete, living form, and can better understand the conditions we have established as necessary in the early days of the development of human life. This attitude of the intelligence has been often stated before, but in an incomplete way; the primitive and the subsequent myths have been confounded together, and it has been supposed that myth was of exclusively human origin, whereas it has its roots lower down in the vast animal kingdom. We hope, therefore, that it will be granted that we have given the true and full exposition of myth.

Anthropomorphism, and the personification of the things and phenomena of nature, of their images and specific types, were the great source whence issued superstitions, mythologies, and religions, and also, as we shall presently see, the scientific errors to be found among all the families of the human race.

For the development of myth, which is in itself always a human personification of natural objects and phenomena in some form or other, the first and necessary foundation consists, as we have abundantly shown, in the conscious and deliberate vivification of objects by the perception and apprehension of animals. And since this is a condition of animal perception, it is also the foundation of all human life, and of the spontaneous and innate exercise of the intelligence. In fact, man, by a two-fold process, raises above his animal nature a world of images, ideas, and concep-

tions from the types he has formed of various phenomena, and his attitude towards this internal world does not differ from his attitude towards that which is external. He personifies the images, ideas, and conceptions by transforming them into living subjects, just as he had originally personified cosmic objects and phenomena.

In myths, since they owe their origin to the reflex power which is gradually organized and developed, man carries on this faculty of personification which had already been exerted in him as an animal. But the object of myth became twofold just as the animal nature became duplex in man, whether as a special image of special conception, or as an intellectual definition of the specific type already formed. The myths are, therefore, from their very nature, either special, that is, derived from the psychical duplication of a personified image; or they are specific, and are derived, as we are about to explain, from the personification of a type.

The deliberate intention to be beneficent or malign, useful or injurious, which is ascribed to any external object, thus transforming it into an intelligent subject, is the first and simplest stage of myth, and the innate form of its genesis. In this case, it is always special, extrinsic, and concrete, and belongs implicitly to the animal kingdom, although more or less vividly in proportion to the mental and physical evolution of the species. It is for the same reason

also proper to man, in whose case it first appears in the indefinite multiplication of fetishes, whatever may be the object venerated, and whatever the form, aspect, and character ascribed to it. This constitutes the primordial impulses, both of religious consciousness and of the spontaneous solution of the problems of the world among all peoples.

While the animation of special objects by animals generates actual myths, yet it only occurs in the acts of momentary and transient perception; they are born and die, they arise and are dissolved in the very act of production, and they neither have nor can have retrospective or future influence on the animal. The world, its laws and phenomena, form for him one universal and persistent myth, so far as he feels himself constrained to vivify and transform them into subjects actuated by will. This consequently is the constant and normal condition of his conscious life with relation to things, and it leads to nothing further; his mental attitude with respect to myth does not vary from his physical attitude towards the atmosphere, the food and water which nourish and sustain him, and the exercise of his functions are in conformity with it, as though it were his natural and necessary element.

Man, on the contrary, since he has acquired the power of reflection, which enables him to reconsider past intuitions by an effort of memory, as well as the psychical image which corresponds to them, is not content with this normal and fugitive effect of appre-

hending the personified object presented to him. The psychical image of his actual perception, which he has ascertained from experience to be beneficent or malignant, or which has been interpreted as such by his fancy, recurs to the mind even when it is absent and remote, and it recurs in the vivid and personified form in which it was first perceived.

Hence come the following psychical facts. On the one side the actual object which he has assumed to be invested with the faculty of will still remains to exert the same external influence; on the other, its personified image is also present to his mind, so that he can regard it with the vivid quickness of the fancy, and invest it, by its manifold relations to other and various phenomena, with efficacy, force, and mysterious purposes. It follows from this inward action and emotion that while in the case of animals the beneficent or malignant object is only invested with life at the moment of perception, and has no more efficacy after its disappearance, man on the contrary retains the same personified object in his memory, and recalls it at pleasure, so that its special efficacy persists, and it continues to be the object of hopes and fears either in the past or in the future. In a word, the natural myth of animals is transformed by man into a fetish, whether this object or its corresponding image in his mind be superstitiously regarded as good or evil, pleasing or terrible.

This was the source of primitive, confused, and

inorganic fetishism among all peoples; namely, that they ascribed intentional and conscious life to a host of natural objects and phenomena. Hence came the fears, the adoration, the guardianship of, or abhorrence for some given species of stones, plants, animals, some strange forms or unusual natural object. The subsequent adoration of idols and images, all sorts of talismans, the virtue of relics, dreams, incantations, and exorcisms, had the same origin and were all dúe to this primitive genesis of the fetish, the internal duplication of the external animation and personification of objects.

It is evident that fetishism in its earliest and most primitive form was always inspired by special objects, since the external perception of animals and of man is special and concrete. But we have seen how our intelligence, by a spontaneous and innate process, was led to form types from the immense variety of special things and phenomena, and these types are the specific forms of such things as are alike, analogous, or identical. We have also seen that by the same necessity of the psychical faculty, which is not inconsistent with the fundamental process of animal intelligence, man animates and personifies these specific types, just as he had animated the special perceptions whence they were generated in his mind.*

* This process of the evolution of primitive myth and of fetishes, will be more elaborately considered in Chapter VII., when we come to

The second form of myth next occurs, if considered as it exists in man, but the third form of myth, if regarded in his solidarity with the animal kingdom. Instead of investing the special fetish of a given object with superstitious fear, he now adores or fears all objects of the same species, or which, in the imperfect classification of primitive times, he believes to be of the same species. Thus, to give a common example, if some particular viper or other form of snake is the first form of fetish, in the second stage the whole species of vipers, and of the snakes which resemble them, is regarded with the same dread. He next supposes all the snakes which he comes across to emanate from a single power, manifesting itself in this shape in various times and places. In the same way, according to the natural evolution of this law, the individual, concrete plant will no longer be the fetish or object of myth, but all those of the same species, or which nearly resemble it. It will no longer be a given spring, but all springs, no longer one particular grove, cave, or mountain, but all groves, caves, and mountains; in a word, the species will be substituted for the individual, the type for the fact.*

speak generally of the historic evolution of science and of myth. The repetition is not superfluous, since it is necessary for the complete understanding of my theory.

* For example, in ancient Roman mythology the *Fons* was first adored, then *Fontus*, the father of all sources, and finally *Janus*, a solar myth, the father of Fontus. Janus, as the sun, was the producer of all water, which rose by evaporation and fell again in rain.

In this second stage to which myth spontaneously attained, it must be observed that all fetishes could not be reduced to a specific or typical image, since in nature, and in ages and conditions when the intelligence was still rude and uncultured, all phenomena or objects could not assume a specific form, but were still regarded as individuals. In this class are the sun, the moon, certain stars and constellations, as well as some other natural phenomena, volcanoes, hot springs, and the like; since these were unique within the range of country inhabited by the savage hordes, they could not become specific. Hence, while all other objects and their respective fetishes followed the natural evolution into a specific type, and through these into the simplest form of polytheism, the special fetish which referred to unique things or phenomena remained special, although it was modified, as we shall see, so as to harmonize with the aspect commonly assumed by other typical images.

It must be observed that we have gradually ascended from the special to the specific fetish, and to types which are resolved by the intelligence into more ideal and less concrete images; precisely because they are ideal and less bound to the form they had before, they are incarnated in an anthropomorphic and anthropopathic form. Released from the necessity of regarding them in a vague form, or one different from that of man, the image becomes more human, and that not only as before in consciousness and purpose, but also in aspect and structure.

In fact, in this stage man does not merely infuse his spiritual essence into these types, but likewise his corporeal form, whence we have the true, human image of myth. This may be seen in the various primitive Olympuses of all historic races as well as among savage peoples, only varying in the splendour of their imagery. They consist in the transformation of the earlier fetish into an intelligent, corporeal person, and result from the formation and personification of types.

Beginning with the mysterious conception of some particular spring as a malignant or beneficent fetish which, although personified, still retains its concrete form, the classifying action of the intelligence gradually constructs, from its points of resemblance to other springs, a generic type which includes them all. This typical conception, personified in its turn, next represents a unique power, of which all the individual and accidental springs are only manifestations. Thus it is clear that man, in the personification of this type or specific conception, is no longer bound to the actual form of the special object which first represented it, but he may be said to mould a more indefinite and plastic substance into which he can with spontaneous or facile art incarnate his whole person. Hence this substance will assume an anthropomorphic form, and will issue, not in a mysterious being of extrinsic and indefinite form, but in a person with human features, obvious to human senses.

It was thus, when the fetish attained to a specific type, that mythical anthropomorphism was generated, and polytheism, properly so-called; a polytheism which represents in its figures and images the humanization and personification of specific types. These afterwards diverge into specifications which vary with the number of phenomena that are united in a single idea or conception. The first polytheistic Olympus consisted of natural types, and at a much later period they became moral or abstract, in accordance with the spontaneous evolution of the intelligence itself.

It was in fact in this way that all the specific myths of the general phenomena of nature had their origin, and in our Aryan race we can, starting from the Rig-Veda, follow their splendid development among Græco-Latins, Celts, Germans, and Slavs; it may also be traced in the memory and historic evolution of other races, and with less distinctness among those which are barbarous and savage.*

* The Sanscrit word *Vayúnâ*, meaning light, was personified in Aurora, and afterwards signified the intelligence, or inward light; a symbolical evolution of myth towards a rational conception. The worship of heaven and earth, united in a common type, is found among all Aryan peoples, and among other races. The Germans worshipped *Hertha*, the original form of *Erde*, earth. The Letts worshipped *Mahte*, or *Mahmine*, mother earth. So did the Magyars, and the Ostiaks adored the earth under the Slavonic name of *Imlia*. In China sacrifices to the divine earth *Heou-tou* and to the heaven *Tien* were fundamental rites. In North America the Shawnees invoked earth as their great ancestress. The Comanchi adored her as their common mother. In New Zealand heaven and earth are worshipped

To take some example which may throw light upon our theory of the evolution of myth, let us

as *Rangi* and *Papi*. (Grey: *Polynesian Mythology.*) The myth of Apollo, light, sun, heat, combined also with serpent worship, is found modified in a thousand ways among all peoples, savages included. See Schwartz, *Ursprung der Mythologie;* J. Fergusson, *Tree and Serpent Worship;* Herbert Spencer, *The Origin of Animal Worship;* Maury, *Religions de la Grèce Antique.* They also appeared among the Hebrew and kindred races. We find in the book of Job that God "by His spirit had garnished the heavens; His hand has formed the crooked serpent" (Job xxvi. 13), expressions which are almost Vedic. From celestial phenomena the myth of the Apollo Serpent descended to impersonate the phenomena of earth, of which we have examples in the Greek fable of the Python, and others. Apollo again appears as the god which agitates and dissolves the waters, and the serpent as the winding course of a river, and also as other sources of water. The sun causes the river water to evaporate, which is symbolized by the dragon's conflict with Apollo, and the victory of the latter. The monster, as Forchhammer observes, is formed during the childhood of Apollo, that is, at a time of year when the sun has not attained his full force. When the serpent's body begins to putrefy, the reptile, in mythical language, takes the new name of Python, or he who becomes putrid. The serpent Python, in accordance with the continual transformations of myth, becomes the Hydra of Lerna, and Hercules, another solar myth, is substituted for Apollo. This Hydra is transformed again into Typhon, a fresh personification of the forces of nature and of the atmosphere, conspiring against heaven. The seven-headed Hydra reappears in another form in the Rig-Veda, where the rain cloud is compared to the serpent whose head rests on seven springs. I have Max Müller's authority for the vigorous alternation of myths in those primitive ages, their extreme mobility, their resolution into vivified physical forms, and the slight consistency of specific types. Aurora and Night are often substituted for each other, and although in the original conception of the birth of Apollo and Artemis they were certainly both considered to be children of the night, Leto and Latona, yet even so the place or island where, according to the fable, they were born is Ortygia or Delos, or sometimes called by both names at once. Delos means the land of light, but Ortygia, although the name is given to different places, is Aurora, or the land of Aurora. (Gerhard, *Griechische*

consider that of *Holda* in the German Pantheon, since it is a generic type of the special primitive fetishes of sources, already in process of formation before the dispersion of the Aryan tribes. Mannhardt (*Deutsche Mythologie*) has shown what was the primitive form of the conception of *Holda* and of the *Nornas*, that is, of the phenomenal appearances of water; Holda, the *lady of waters*, first watched over the heavenly sources, and then, by a subsequent interweaving of myths and duplication of images, she kept and guarded the souls of new-born infants. This early conception by progressive specification gave birth to those of the *Nornas*, of *Valkuria*, *Undine*, and others. The primitive fetish, or fetishes of waters out of which the specific type, afterwards personified, was evolved and formed, were at first so

Mythologie.) Ortygia is derived from *Ortyx*, a quail. In Sanscrit the quail is called *Vartikâ*, the bird which returns, because it is one of the birds to return in spring. This name *Vartikâ* is given in the Veda to one of the numerous beings which are set free and brought to life by the *Asvini*, that is, by day and night, and *Vartikâ* is one of several names for the dawn. *Vartikâ's* story is very short: she was swallowed, but delivered by the Asvini. She was drawn by them from the wolf's throat. Hence we have Ortygia, the land of quails, the east; the isle which issued miraculously from the floods, where Leto begot his solar twins; and also Ortygia, a name given to Artemis, the daughter of Leto, because she was born in the east. The *Druh*, crimes and darkness, may in their subsequent development be contrasted with these brilliant myths. Aurora is represented by them as driving away the odious gloom of the *Druh*. The powers of darkness, the *Druh* and *Rakshas* were called *Adeva*, and the shining gods were called *Adruh*. Kuhn believes that the German words *trügen* and *lügen* are derived from *Druh*.

bound to the concrete form of the phenomenon, that although animated, it could not assume a human aspect and form. But when the specific type which ideally represented the power manifested in all the various modes of special phenomena was evolved, then man was released from the concrete and individual forms of the fetish, and readily moulded it in his own corporeal as well as in his moral image. So Holda, changed from a heavenly to an earthly deity, was transformed into the goddess of wells and lakes, and assumed a perfectly human and even artistic form. She loved to bathe at noon-day, and was often seen to issue from the water and then plunge anew into the waves, appearing as a very fair and lovely woman.

Again, we know that in the gradual mythical evolution which found its climax in Apollo, the animation of this type, so fruitful in special instances, extended even to the form of his arms, his bow and arrows, and to the place of his habitation at Delphos. He was armed, according to Schwartz, with the rainbow and with thunderbolts, and Delphos was esteemed to be the centre and navel of the world.

These mythical ideas have their special reproduction in the mythology of the Finns. (Castren.) The god *Ukko* with his great bow of fire sends forth trees as darts against his enemies ; while fighting, he stands erect upon a cloud, called the *umbilicus* of heaven. Thus we see that the process of myth is similar, even in different races.

By the primitive personification of the special fetishes whence he was evolved, the *Indra* of Vedic India is shepherd of the herd of heavenly kine. *Vritra*, a three-headed monster in the form of a serpent, steals away the herd and hides it in his cave. Indra pursues the robber, enters the cave with fury, overwhelms the monster with his thunderbolt, and leads back the kine to heaven, their milk sprinkling the earth. This myth gradually assumed in the Vedic hymns more splendid and artistic forms, and more amazing personifications. The original motive of the myth, as it has been interpreted even by Indian commentators, was the storm with all its alternations which bursts forth with more terrific violence in hot climates. The luminous clouds which bring rain are the purple kine whom a black demon tries to steal; the fruitfulness of the earth depends on the issue of the contest, and the thunderbolt disperses the cloud, which falls on the earth in rain, while *Indra*, that is, the blue sky, appears in his splendour.*

It may be clearly seen from these examples how the specific myth was gradually developed. We have said that in addition to the myth which referred to types constructed from special and manifold suggestions, alike or analogous in extrinsic circumstances, others were formed from definite natural objects, in their relations to men and to their acquaintance with cosmic facts in those very early times. These, how-

* Michel Bréal: *Hercule et Cacus.*

ever, although definite, assumed anthropomorphic forms, like those which were specific. The cause of this identity of construction is to be found in the influence exerted upon them by the earlier myths. By a necessary equilibrium and spontaneous symmetry of mental creations, these were also modified by the gradual formation of contemporary images. In this way the solar myths were elaborated and developed among the Aryan peoples and other races; their aspects became much more anthropomorphic and anthropopathic in proportion as the typical myths assumed a human form.

The primitive myths of the secondary form were at first grouped round physical and external phenomena, because these were originally the most obvious to man. But the specific moral types had their origin by reaction, and by a more strictly intellectual process, and these were personified in the same way, although in this second stage they were not so numerous. Yet their appearance and creation were inevitable, since the same faculty and classifying process had to be carried out in the intellectual and moral order as in that which was extrinsic and cosmic; since the mind and consciousness and intrinsic faculty of the intelligence are identical. And when once these ultimate types were formed, the same necessity impelled their animation and personification in anthropomorphic images. Of this we have abundant instances in all the traditions of nearly all the peoples of the world.

CHAPTER IV.

STATEMENT OF THE PROBLEM.

In the preceding chapters we have considered and, as we hope, demonstrated the origin and genesis of myth in general, an origin and genesis which had their first impulses and causes in the animal kingdom as a whole, since these beginnings were the necessary result of the psychical exercise of the perception and intelligence. We next discovered in man, as he issued from a simply animal condition and attained the power of reflection, the origin of the special myth or fetish, which was a higher evolution of that which is proper to animals; hence the origin of the specific myth was altogether anthropomorphic, whether physical or moral; and hence came also the development and ramification of all mythologies, and of universal polytheism.

It may be seen from the reality and truth of this theory how much mistaken those men are who hold, owing to their religious prejudices or to their systems of logic and history, that monotheism was the first intuition of man, or at any rate of the privileged races.

This is altogether impossible, since such an opinion is opposed to the genuine development of the intelligence, to its primitive constitution and progress, and to the essential *solidarity* of human and animal nature.

In the case of animals as well as of man the implicit act and psychical process of communication between the world and themselves consist in the individual and concrete animation of the thing or phenomenon perceived; whence they are resolved into conscious subjects, acting with a given purpose; the difference in man's case, due to his power of reflection, consists in the fact that he ascribes to the fetish distinct mental characteristics, regarding it as a subject, actuated by will, and invested with an external form. Hence it is impossible that man should have had any primitive intuition of a perfectly rational and universal *Idea*, since his intelligence is so constituted that it is slowly developed from the animal condition into a humanity which is mythically reflex, and he rises from the single to the specific, from phenomena to the type which more or less exactly corresponds to them.

We are convinced that by these researches, we have eradicated the previous misconception, which cannot be revived or maintained except with the weapons of sophism, and by defying evidence and the very nature of things.

While man has risen from the individual myth to

that which is specific, infusing anthropomorphic life into the whole of nature, and into his own sensations, emotions, and conceptions, he has pursued an art virtually the same as that whence science is generated. The instrument, both with respect to the formation of myths and to the formulation of science, is in fact identical, and the process also is the same. Science, like myth, observes, analyzes, and classifies observations, and gradually rises to a conception of the specific type, and hence to a unity which becomes ever more complete and universal.

In the composition and mythical animation of the world, whether by special personifications or by those which are typical, and by the sensations corresponding to them, man makes a fanciful classification of phenomena, he observes and studies their beneficial or injurious effects on himself, and in this empirical way is able to estimate their value. On the other hand, he rises in the social scale by means of his superstitious and religious feelings, which act as a stimulus and symbol, so far as he subjects his animal and perverse instincts to the deliberate precepts which he imagines to be expressed by these myths.

In so far as the empirical observation of things is irrational, and obedience is paid to the fanciful precepts of oracles, it is not the result of an explicit moral law, yet there is on the one side some knowledge of the qualities, habits, and periods of things, and on the other a civil and human order which is

gradually formed and developed. In fact, in the case of the higher historical races it is important to make a more explicit and accurate study of the fetish religion, that is, of the mythical animation of any special phenomenon or thing. Although the scope of such religion is superstitious veneration, or abject fear, yet it is impossible that it should not induce a more precise and less confused notion of the relative condition of things. In this way observation becomes more accurate, and the intrinsic use of the thing is often recognized. By the gradual exercise of such analysis in the case of all or most phenomena, man obtains a clearer knowledge of his environment.

While a juster estimate of the empiric value of special objects is obtained in this manner, the subsequent, though sometimes mistaken classification of their specific types enables the mind to arrange his knowledge of natural things in a more synthetic and orderly way, and by such classification man is always tending towards a more universal unity: he places the general forms of phenomena in an ideal harmony, which fancifully symbolizes their laws.

In the succeeding chapters we shall see how this process is accomplished, and how it leads up to the explicit exercise of the reason. A more definite empiric knowledge, and the harmonious classification of specific types with a view to unity, are a proof of a relatively greater improvement, both in civilization and morality. This is abundantly shown in all those

peoples who have attained to an altogether anthropomorphic polytheism, either among the Aryans, prior to their dispersion, in the Vedic period in India, among the Celts, Græco-Latins, Germans, Slavs, or in the Finnish races, Mongols, Chinese, Assyrians, Egyptians, Mexicans, and Peruvians, as well as among the barbarous peoples of modern times.

The imagination, the faculty which creates and excites phantasms in man, is not, as is erroneously supposed, the primary source of myths, but only that which in a secondary degree elaborates and perfects their spontaneous forms; and precisely because it is near akin to this primordial mythical faculty, it goes on to organize and classify these polytheistic myths. By a moral and necessary development an approximation is made, if not to truth itself, at any rate to its symbols; whence reason is afterwards more easily infused into myth on the one side, and on the other it is resolved into rational ideas and cosmic laws. It was in this way that poets perfected myth in its influence on virtue and civilization, and by them it was directed into the paths of science and of truth.

As Dr. Zeller has well said in his lecture on the development of monotheism in Greece herself, the great Greek poets were her first thinkers, her sages, as they were afterwards called. They sang of Zeus, and exalted him as the defender of righteousness, the representative of moral order. Archilocus says that

Zeus weighs and measures all the actions of good and evil men, as well as those of animals. He is, said Terpandros somewhat later, the source and ruler of all things. According to Simonides of Amorgos, the principle of all created things rests with him, and he rules the universe by his will. Thus, as time went on, Zeus became, in the general conception, the personification of the world's government, which was delivered from the fatality of destiny and from the promptings of caprice. Destiny which, according to the early mythical representation, it was impossible to escape, is resolved into the will of Zeus, and the other gods which were at first supposed to be able to oppose him, become his faithful ministers. Such is the teaching of Solon and of Epicharmos. "Be assured that nothing escapes the eyes of the divinity; God watches over us, and to him nothing is impossible."

This impulse of the imaginative faculty combined with the process of reason is most plainly seen in the conceptions of the three great poets of the fifth century, Pindar, Æschylus, and Sophocles. In the words of Pindar: "All things depend on God alone; all which befalls mortals, whether it be good or evil fortune, is due to Zeus: he can draw light from darkness, and can veil the sweet light of day in obscurity. No human action escapes him: happiness is found only in the way which leads to him; virtue and wisdom flow from him alone."

We find the same order and manner of thought in Æschylus, although he remained faithful to the polytheistic creed, which indeed confirms the truth of our theory. The moral law was gradually developed and purified by this long succession of poets, and it clearly appears from Æschylus and his successors how man reaps that which he has sown: he whose heart and hands are pure lives his life unmolested, while guilt sooner or later brings its own punishment with it. The Erynnyes rule the fates of men, and may be said to sap the vital forces of the guilty; they cleave to them, excite and stimulate them to madness until death comes. The ancient and mysterious mythical tradition of the strife between the old gods and the new was astutely used by Æschylus to teach us how the terrible vengeance of the Eumenides gradually gave place to a gentler and more humane law; just as the primitive despotism of Zeus was gradually transformed into a providential and moral rule of the universe.

Sophocles attained to a higher degree of perfection in the paths of gentleness. No ancient poet has spoken more nobly of the Deity, although his language is altogether polytheistic. He shows the highest reverence to the gods, whose power and laws rule all human life. On them all things depend, both good and evil, nor could any one violate with impunity the eternal order of things. No act or thought escapes the gods; they are the source of wisdom and happiness. Man

must meekly comply with their precepts, and must offer up his pains and sorrows to Zeus.

These utterances of the ancient poets never go beyond the range of polytheism, yet they show how far intrinsic morality and truth were developed, even by the imaginative and mythical faculty of the human mind, during the gradual historical evolution of the race. The plurality of gods appears to be the manifestation of the divine principle; their action on the world lost almost all trace of arbitrary power and of their former versatility and caprice. The superstition of polytheism remained, but it had an inward tendency to more rational conceptions and principles.

From this brief notice, as well as from the remarks which preceded it, it appears how the evolution of myth, from its beginning and in its historic course, led to a more perfect, although empiric acquaintance with the world, and with the moral principles and civilization of peoples. The logical faculty by which the development is gradually effected is the same by which from another point of view science becomes possible.

We have clearly demonstrated the indisputable fact that the absolute condition of intrinsic animal perception, and consequently of the primary perception of man, was the animation and vivification of the things and phenomena perceived. This primary acquaintance with things depended on their spontaneous resolution into active and personal subjects. Nor

could it be otherwise. Although the scientific idea or notion of objective reality in itself could not be grasped by simple animal intelligence, the impression of the thing perceived was necessarily that of a subjectivity resembling that of the observer, not indeed in outward form and figure but in intrinsic power, whatever might be the extrinsic form and figure of the object or phenomenon.

The original condition of animals, and of man himself in his primordial life and consciousness, is and was the intrinsic personification of the things perceived: from this source the human intellect slowly and with difficulty attained to science, by virtue of that psychical reduplication which has been so often mentioned.

The motive or subject of myth may be external, cosmic, or it may be internal, intellectual, and moral, but in each case the cause and faculty at work are the same. Just as the primary condition of observation, and consequently the motive principle of science, consists in the primitive exercise of the intelligence, which leads to empirical and rational knowledge, so myth and science have a common origin in the immediate transformation of natural objects and phenomena into living subjects, and they flow from the same deep source. The object in view is different, but their constructive faculty is the same, and they are, up to a certain point in their long historic course, evolved in the same way. Science, therefore,

from one point of view, is the gradual exhaustion and dissolution of myth into the objects which are scientifically investigated, and this will appear more clearly in the sequel.

The series of various phenomena, whether of light, of meteors, of water, of vegetable and animal forms, which were the first subjects of myths, became so interwoven as finally to be represented in an anthropomorphic personality, and were thus gradually lost and evaporated in the ideal symbol. As time went on, by the exercise of the intelligence, and by the aid of the observations and collateral experiments naturally connected with them, man ended where he had begun; released from myth, he only recognized the facts and laws of the world. This clearly shows, not only the formation of myths, but the process of evolution by which they pass into science, in which they find their termination.

If, however, myth and science have the same origin, and start from a common fact, a fundamental principle is necessary, and an internal human act, which is at once the cause and genesis both of myth and science. And although the source is one, myth and science vary in their aspects and effects, and have different fields of historic activity, so that it is necessary to trace the cause of this diversity in their progress and results, to enable us to make a scientific definition of the nature of myth and science, their respective sources and objects.

If on the one side we continually see the birth of fresh myths, which ramify into many fertile sources of superstitions, of religions, of poetry and æstheticism; on the other side we see almost simultaneously a more or less distinct and lively manifestation of the scientific faculty, although still in an empirical form. They are like two streams which issue from the same source and take a parallel course, sometimes mingling their waters, only to separate anew, and then again to become united as they fall by a wide mouth into the sea.

In this manner we have ascertained the actual origin of science and of myth, and have entered on a field perhaps never before attempted nor contemplated; we have established a firm basis for such researches, and, which is perhaps still more important, have shown the continuity of the mythical faculty between man and the animal kingdom. We have ascertained this fact, in its cosmic necessities, both physiological and psychical, but without considering the faculty on which it depends; we have still to decompose the elements of which it consists, and to consider their nature and number.

This inquiry forms the chief problem we have to solve, and it is precisely what we have endeavoured to state in this chapter. In the necessary order of things the fact has its physiological and cosmic conditions in man; it is therefore necessarily internal and psychical, and it is accomplished by the special

and intrinsic exercise of the intelligence. We shall be convinced of this truth if we only consider that science and myth have a common origin.

It is evident that there are great difficulties in such an inquiry; for, putting aside other extrinsic difficulties, we have to reduce to a single act or fact the origin of the two vast worlds of myth and science; it is needful to gauge the inmost psychical faculty of the intelligence, and to discover the continuous yet rapid and delicate process of its exercise.

If we are able to attain our object and to tear away the veil which conceals this mysterious act, we shall have a noble recompense in the laborious path on which we have entered, inasmuch as we shall reveal one of the most important laws of life, of the exercise of reflex intelligence and of the genesis of science. Yet we are very sensible how far we are from being equal to the enormous difficulties of this inquiry.

CHAPTER V.

THE ANIMAL AND HUMAN EXERCISE OF THE INTELLECT IN THE PERCEPTION OF THINGS.

Apprehension is the act, both in animals and in man, by which the spontaneous and immediate animation of things and of phenomena is accomplished. It is therefore necessary to pause and consider this act, since it is, even in man, the source and foundation of the origin of myth, and in it we shall find the causes, elements, and action by which such a genesis is effected. This fact is so evident that the necessity of making such an inquiry might almost be taken for granted, since the truth can be ascertained in no other way.

In the case of animal perception, which we have already considered, the external perception of an object is composed of three elements: the phenomenon perceived, the living subject with which this phenomenon is animated, and the vague yet real power involved in the life thus infused into it by the animal. Supposing any other animal to be the object

perceived, these three elements are self-evident; since the phenomenon perceived in a given form causes the immediate assumption that it is a subject, actuated by a purpose of offence or defence, and hence follows the apprehension of a power capable of affecting him, which has in this case a real existence. Phenomenon, subject, effective power, follow in a rapid and inevitable sequence, and are instantly combined in the integral image formed of the object apprehended by the senses.

In fact, an animal which fights with another, which seizes on his food as a prey, or which is in dread of some enemy or unfamiliar object, recognizes either the species or the individual from its external form, and constitutes it into an animated subject, and ultimately into an actively offensive or defensive power, or into one which satisfies his appetites. Such a fact, and such elements of the fact, recur in the whole animal kingdom, even among those which only apprehend external things by the sense of touch. As we ascend higher in the scale of animals to those who possess other senses and a more elaborate organism, we find the same fact in a more perfect and distinct form.

Those animals which, since they are without the sense of sight, have no perception of distance, wait until their prey touches their antennæ, mouths, or claws, and yet the same distinct act is accomplished in these three specified elements. They would not lie in wait for their prey, unless they had already

formed a conception of its possible image, consisting of a form, subject, and effective force, combined in a single intuition. When this external prey is presented to the senses, the phenomenon, subject, and effective power arise in rapid succession, and are united in one unique consciousness. This truth appears from the animal's efforts not to let his prey escape destruction.

From the reciprocal apprehension of animals, these three elements which constitute it may be clearly seen. Although such a truth, precisely because it is evident, may appear simple to those who seek truth from the clouds, or by means of logical or tortuous artifice, yet such are the characteristics of true science. For the new facts which she interprets and classifies appear old as soon as they are understood, although they have never before been explained.

Although such a fact is manifest in the case of reciprocal animal perceptions, it may appear more difficult to verify it with respect to perceptions which do not refer to other animals, but to natural phenomena, or to inanimate, unconscious things. We have shown that all animal perception is possible only so far as they are able to infuse their own consciousness and psychical power into every object of nature, since they are unable to comprehend the thing or phenomenon except as an objective reality, without reference to its real cosmic importance. Since this is necessarily the case, the object perceived, even when it is

not an animal, is always transformed into a living subject, acting deliberately. And although this is sometimes done in a vague way, when the object in question has not the external form and movements of an animal, yet it is always regarded as a real power.

When a well broken horse, for example, goes on his way quietly, perceiving nothing which strongly attracts nor alarms him, the sudden flutter of a cloth, the flaring of a lamp, the rush of water, or some violent noise will cause him to stop, to plunge and kick, or to bolt away. We have already shown, by experiment, the exciting cause of his alarm and suspicion. The sudden fluttering of the cloth in the wind was a phenomenon perceived by the horse, and since he regarded this phenomenon as an animated subject, and consequently as a real power, it is evident that his fear was caused by the sudden appearance of a living form, and the direct apprehension of a subject which might possibly be hurtful or dangerous. In this way, the circle is completed and combined in one unique phantasm; a phenomenon, a living subject, and a real power.

In this instance, the psychical law is so clear that it can hardly be disputed. But if we consider any other animal perceptions, we find that the law still holds good, as we have already shown in various instances. In all cases the apprehension takes place in the same way, and consists of the same elements,

namely, of a phenomenon, a living subject, and a real power. The exercise of animal apprehension is the rapid, necessary, and perpetual concentration into a single image of the phenomenon, subject, and cause; that is, given the perception of a phenomenon, the animal endows it, with respect to himself, with consciousness, and consequently with real power.

In fact, the faculty of perception cannot be exercised in any other way, nor can it consist of any other elements. In nature, the sensible qualities of things are all resolved into general and special phenomena, appearances, and extrinsic forms, as far as animal and human intuition, and the character of the subject which perceives and feels them, are concerned; and they are perceived just so far as we and as animals are able to communicate by means of our senses with the world and with ourselves. A phenomenon and an intrinsic form signify, at the moment of perception, the thing, the object which the conditions of our senses enable us to perceive, and the intrinsic power of this phenomenon implies a cause. Natural phenomena and beings are thus reciprocally linked together as causes and effects, an effect becoming in its turn the cause of a subsequent fact; that is, when we consider things in themselves, and not relatively to the animal or man who apprehends them.

If, therefore, there are in animal consciousness and intelligence three elements of apprehension,

afterwards fused into a single fact, it follows that the extrinsic relations of beings and forces are subjectively reciprocal; there is the given form of a phenomenon, and, intrinsically, it consists of an active power, eternally at work, since there is no being nor form which stands still and is not reproduced in the infinite evolution of the universe.

Since, to the percipient, the extrinsic form, whatever it may be, remains the same as that which was first presented to him, the phenomenon is bounded by his faculty of perception, followed by the immediate and implicit assumption of a subject, and consequently of a possible and indefinite causality. This internal and psychical process of the animal corresponds with the actual condition of things, as they appear and really are; a correspondence which is in itself a powerful confirmation of the truth.

Since an animal is devoid of the explicit and reflex process of the intellect, it has not and cannot have any conception of the thing in itself, the intrinsic essence of the phenomenon, nor yet of the objective and cosmic cause; because it animates the phenomenon with its own personality, which has assumed the external form of this phenomenon, it is conscious of a cause, like itself, transfused into the object in question. We have shown that phenomena affect animals in this way, and that they are conscious of being in a world of living subjects, constantly actuated by the deliberate purpose of influencing them.

The faculty and elements of apprehension are precisely similar in man and animals, since extrinsic things present the same appearance to both alike, and the perceptive power acts in the same way. We cannot, indeed, go back to our first beginnings, and it is difficult for those who are not accustomed to such researches to discover the primitive facts of their own being, which have been so much modified by exercise and the intrinsic use of reflection for many ages; yet some certain signs remain, nor would it be now impossible to reproduce them. No one can doubt that man also began to communicate with the world and with himself by his perception of a phenomenon, of some extrinsic quality or form. From this he directly apprehended the thing and its cause. No intelligent person can believe that man had any direct intuition of the thing in itself, independently of the extrinsic phenomenon by which it was presented to his perceptions: he could not by the sudden apprehension of all natural objects intuitively grasp the *Idea*. This will be more fully shown in the following chapter.

In accordance with this statement, man, who still retains his animal nature, has exercised the same faculty of apprehension by the synthetic process of the three elements which compose it in the case of animals; he attains therefore to the same results, that is, he animates the object of perception, and considers it as an efficient cause. This identical faculty of perception in man and animals was only differentiated

when the reflex power of man subsequently enabled him to regard objects, as we do now, as inanimate, and subject to the universal laws of nature.

Even now, after all our scientific attainments, we are not wholly free from the former innate illusion; we often act towards things as if we lived in the early days of our race, and continue that primitive process of personification in the case of certain objects.

We have shown what was the origin of the fetish and of myth, and how it arose from the impersonation of all natural objects and phenomena, which are transformed into living subjects. This shows that the faculty, elements, and results of the apprehension are identical in man and animals. If man created the fetish which in process of differentiation generated all kinds of myths, he, like animals, was directly and implicitly conscious of the living subject, and in it of an active cause. Although in man the fetish retains its personality in his memory, and becomes the cause of hopes and fears throughout his life, while its effect on the animal is only transitory, and at the actual moment of perception; yet this does not invalidate the truth of the principle, nor prove that their impulses and genesis are not identical. Thus the analysis of the faculty of apprehension confirms and explains the proof before given of the origin of myths, and explains their causes.

We have all, however unaccustomed to give account of our acts and functions, found ourselves in circum-

stances which produced the momentary personification of natural objects. The sight of some extraordinary phenomenon produces a vague sense of some one acting with a given purpose, and hence of an actual fetish. A man will sometimes address the things which surround him, and act towards them as if they possessed consciousness and will. Children, who are still without experience and reflection, will often invest external objects with solidity.

A child, as soon as it can guide its own motions, will grasp anything which is pliant and yielding as firmly as if it were solid, thus implicitly judging the thing from its appearance. In the same way, a child confidently relies on any support, however weak and insufficient it may be, arguing as usual from the appearance to the thing itself. Nor must it be said that experience is necessary to correct these errors. The implicit faculty of apprehension is prior to experience, which only becomes possible by means of this faculty. The elements of this faculty unconsciously fulfil and pursue their office in the child, aided by the reflex motions which are cerebro-spinal and peripheral, as they have been produced and organized in the species by evolution; but they, as well as these reflex physiological motions, are prior to the same temporary experience.*

* We are not here concerned with *a priori* metaphysics, but with the psychical and organic dispositions slowly produced by evolution and by consciousness in its cosmic relations. The organic nature of

Thus the new-born infant sucks the milk which serves for its nourishment from its mother's breast; it is impossible in this case that such a class of elements should not be spontaneously developed; the child feels the nipple and adapts its mouth and mode of breathing to it, while pressing the breast with its hands to express the milk. If much in this operation might be ascribed to reflex movements, yet in association with them, supplementing and rendering them possible, there is an implicit perception of the external phenomenon through the sense of touch, and he becomes conscious of the object, and of its causative power; such power consisting in this case of its capacity to satisfy his wants. In short, all animals, man included, in every act of communication with the world, exercise this faculty by means of the three elements which constitute it. If we consider the actions of infants, and still more of all young animals, this truth will be vividly displayed.

In common speech, even to this day, all men, both learned and unlearned, speak of inanimate things as if they had consciousness and intelligence. While this mode of expression bears witness to the extremely early origin of the general personification of natural objects, it also shows that even now our intelligence is not emancipated from such a habit, and our speech

these reflex phenomena is due to the fact that in the long course of ages their exercise has, through physiological evolution, first become voluntary or spontaneous, and then unconscious.

unconsciously retains the old custom. Thus we call weather good and bad, the wind mad (*pazzo*) or furious, the sea treacherous, the waters insidious; a stone is obstinate, if we cannot easily move it, and we inveigh against all kinds of material obstacles as if they could hear us. We call the season inconstant or deceitful, the sun melancholy and unwilling to shine, and we say that the sky threatens snow. We say that some plants are consumed by heat, that some soils are indomitable, that well cultivated ground is no longer wild, that in a good season the whole landscape smiles and leaps for joy. A river is called malevolent, and a lake swallows up men; the earth is thirsty and sucks up moisture, and plants fear the cold. The people of Pistoja say that some olive trees will not feel a thrashing, that they are afraid of many things, and that they live on, despising the course of years. Again, they say that olive trees are not afraid of the pruning knife, and that they rejoice in its use by a skilled hand. Thousands of such expressions might be adduced, and we refer our readers to Giuliani's work, "*Linguaggio vivente toscano.*"

Nor do we only ascribe our own feelings to inanimate things, but we also invest them with the forms and members of the human body. We speak of the head, shoulder, back, or foot of a mountain, of an arm of the sea, a tongue of land, the mouth of a sea-port, of a cave, or crater. So again we ascribe teeth to mountains, a front (*fronte*, forehead) to a

house; there is the eye-brow (*ciglio*) of a ditch, the eye of heaven, a vein of metal, the entrails of a mountain. The Alps are bald or bare, the soil is wrinkled, objects are sinister or the reverse (*sinistra, destra*),* and a mountain is gigantic or dwarfish.

In like manner we ascribe our own functions to nature. The river eats into the land; the whirlpool swallows all which is thrown into it, and the wind whistles, howls and moans; the torrent murmurs, the sun is born and dies, the heavens frown, the fields smile. This habit is also transferred to moral questions; and we speak of the heart of the question, the leading idea, the body of doctrines, the members of a philosophic system; we infuse new blood into thought. Truth becomes palpable, a theme is eviscerated, thought is lame, science is childish. History speaks clearly; there is an embryo of knowledge, a vacillating science; the infancy, youth, maturity, and death of a theory; morality is crass, the spirit meagre or acute; the mind adapts itself, logic is maimed; there is a conflict of ideas, the inspiration of science, truncated thoughts. Again we talk of the head of the mob, of the foot of the altar or the throne, of the heart of the riot, of the body of an army, of a phalanx, of trampling under foot, duty, decency, and justice.

From these examples, and indeed we might say

* The double meaning is projected into objects. The primitive meaning of *dexter* was *fitting, capable*, and it was then applied to the side of the material body. Sansc. *dacs*, to hasten. Ascoli, *Studi linguistici.*

from the whole of speech, especially if we go back to the primitive value of words and to their roots, it appears to what a vast extent man originally projected himself, his consciousness, emotions, and purposes into inanimate things; and how, even under the historical conditions of civilization, he still personifies the world, and ascribes to it the forms of his own body and limbs.

Again, we have plainly shown that man, by the intrinsic reduplication of his psychical faculty, spontaneously retains and personifies the inward phantasm generated by such a projection of special natural objects on his perception. In the genesis of such fetishes, and also when, by an effort of will, he recalls them to his mind, this faculty with its constituent elements is brought into action. In fact, when the image is recalled to the mind, it is represented like the external phenomenon; and consequently it involves and generates the thing of which the phenomenon is the external vest, that is, its causative power; and in this way the objective process of its formation is inwardly reproduced. Since the cosmic reality is thus ideally reproduced, the inward substance of the fetish assumes a really efficacious power, whether in its extrinsic form, or in its intrinsic image, and in this way primitive superstitions had their source.

In the case of savage and primitive man the inward image of the fetish without its bodily presence is,

owing to the process already described, not merely valid as a real entity, but it becomes a mysterious apparition in the sphere of fancy, in a way analogous to our belief in the reality of things seen in a dream or in moments of hallucination. This appears in the history of all peoples past and present, whence it is certain that primitive man not only formed personifications of external objects and of his own emotions, but also of their images, as they were retained in his memory. In both cases the sequence of the three elements of apprehension, the phenomenon, subject, and cause, is due to the same unique faculty; in a word, the inward perception is identical in its genesis and laws with that which is external.

These are not the only results which follow from the exercise of this faculty. By the spontaneous classifying action of our intelligence we rise from the perception of special and individual objects and phenomena to their various types, and hence to an inward and ideal world of specific representations, as if these were causative powers, informing the multitude of analogous and similar phenomena in which they are manifested. These specific types, which are more strongly present to the fancy in the primitive exercise of the intelligence, also become personified, and they generate what is called polytheism in all its forms, varying according to the races, times, places, and respective conditions of morality and civilization in which they are found.

The same psychical faculty and the same elements are necessary for the personification of such types or idols. The three elements appear in their proper sequence even in the amorphous phantasms which these types first shadow forth, and which are subsequently perfected and embodied in human form. For the consciousness of the external form always exists in the first vague and nebulous conception of the phantasm which gradually appears and formulates itself in the vivid imagination ; and hence follows the phenomenal vest, which, as usual, generates the corresponding subject, informed with a causative power. This process clearly shows, and in fact constitutes, the essence of myth.

Since the types vary very much, and are indeed unstable from their very nature, constantly becoming formed and again decomposed, the primitive mythologies of all people are in like manner very various, indefinite, and subject to constant change.

It appears in the Vedic mythology, and also in that of the ancient Greeks and Latins, how often the typical myths of Agni, Varuna, Indra, Asvini, and Maruti; and again, of Zeus, Here, Athene, and the rest, are changed and reconstituted. This shows how the same human faculty, the same elements which constitute the perception and primitive personification of external phenomena, are those also of the specific and intrinsic phenomena. Just as man, in the primitive conditions of his existence, by the psychical and

physiological law of his perception, which he has in common with animals, transformed the world and its phenomena into subjects endowed with conscious life; so by his psychical faculty of reduplication he personified the mental images of these same subjects as fetishes and myths; and subsequently invested them with more distinctly human forms, and also with specific types of humanity. The same faculty and conditions of animal perception afterwards become the true and only causes of the superstitions, mythologies, and religions of mankind. The law of continuity is unbroken, and this is a certain confirmation of the truth.

This faculty, inward function, and process of mythical and symbolic facts led in course of time to the evolution and beginning of knowledge, which is first empirical and then rational. Therefore, we must repeat, the extrinsic and intrinsic perception, the specification of types, and their modification into a unity which was always becoming more comprehensive, are the conditions and method of science itself, which is only developed by means of this faculty. Hence the elements and intrinsic logical form of science are identical with those through which mythical representations and the inward life of the human intelligence are developed.*

* A careful reader will not hold this repetition to be unnecessary, since it explains from another point of view the fundamental fact of perception and its results. It is here considered with reference to the three elements which constitute this fact.

Besides, as we have before remarked, the empirical knowledge of things begins and is perfected in the superstitions of fetishes and myths. Ideas are modified and become purer as they converge into types, and the principle and method at once become more rational. Either in the faculty of perception and in its elements, or in the inward classification of specific forms, or again in the more perfect empirical knowledge of phenomena, the progress of myth and science go on together, and they are not only developed in a parallel direction, but the form becomes the covering, involucre, matrix, or, as I might say, the *cotyledons*, by means of which the latter is developed and nourished. Even in more rational science this faculty, and these elements, necessarily recur, since in every human conception we find the material aspect, or its mental image, the thing and its cause, and, as we shall see, some mythical personality is insensibly identified with it.

The act which produces myth is therefore the same from which science proceeds, so that their original source is identical. The same process which constitutes the fetish and myth also constitutes science in its conditions and form, and here we find the unique fact which generates them both; science, like myth, would be impossible without apprehension, without the individuation of ideas, and the classification and specification of types.

Before going further I must briefly recapitulate

the order of ideas and facts which we have observed, so that the process may be as strictly logical as it is practical. Since, in the elements of apprehension, perception is absolutely identical in man and animals, its primitive effects in animating natural phenomena are the same. But man, by means of his reduplicative faculty, retains a mental image of the personified subject which is only transitory in the case of animals, and it thus becomes an inward fetish, by the same law, and consisting of the same elements as that which is only extrinsic. These phantasms are, moreover, personified by the classifying process of types, they are transformed into human images, and arranged in a hierarchy, and to this the various religions and mythologies of the world owe their origin. Since such a process is also the condition and form of knowledge, the source of myth and science is fundamentally the same, for they are generated by the same psychical fact. It is in this way that the progress of human intelligence was developed in the course of ages; its attitude varies in various races, but the impulses, the faculty, and its elements are identical. I do not think that this unique fact in which myth and science have their source has been observed before; still less has any one defined the limits of human intelligence, and recognized in the simple acts of animals the formal and absolute conditions of human science, and the origin of myth.

If I am not deluded by a prejudice in favour of my own researches, this theory is a contribution to truth. It is confirmed by the solidarity which it establishes between the acts and laws of the psychical human faculty, and that of animals which necessarily preceded it. No science can be constituted without such solidarity; this great truth was felt and, after their manner, demonstrated by scholastic philosophers, or, as it was afterwards scientifically expressed by the genius of Leibnitz: *Natura non facit saltum!*

CHAPTER VI.

THE INTRINSIC LAW OF THE FACULTY OF APPREHENSION.

We have now carefully considered the acts and dynamic activity of human thought. We have seen in what animal and human perception consists, and how it acts; how the subjects developed in our imagination are gradually united in specific forms or types, and are arranged in a system, whence follow the first symbolic representations of science. But our task is not yet accomplished, since much more is needed to display all that this fact involves, so that we may fully understand the inward evolution of myth and science in history and in our race, and not merely in the individual man.

The faculty and its effects, which could primarily be reduced to this unique and indivisible fact, do not exclusively belong to primordial ages, but go on through all time, our own included, while assuming divers forms and fresh aspects as the faculty of the intellect becomes more developed. It is an indisputable truth that the influence of myth on thought

and fancy, a survival from prehistoric ages, still prevails among the common people both in town and country, among those who are uncultivated, and even in the higher classes conventionally called good society.

It is more difficult to trace the occasional existence of the same influence among those who think rationally and investigate the laws of the universe while acquainted with the earlier mythical process; and yet, as we shall show, the greatest and most able men are not unfettered by it. Myth has hitherto been regarded as a secondary and fanciful product of the psychical human faculty, due to extrinsic impulses, rather than as the primitive and intrinsic necessity of the intelligence—a necessity which has its roots in animal intelligence itself; and the unique fact which generates both myth and science has not been ascertained. If this fact and law had been discovered before, we should have more readily understood religions, philosophic systems, and the successive forms of science, and pure reason would have made more rapid progress. Our theory, besides giving a rational explanation of the different forms assumed by thought in the course of its historic evolution, will, I hope, also account for many psychological phenomena which have hitherto been imperfectly understood, such as dreams, hallucinations, the aberrations of insanity, and the like. The primitive fact and its effects reappear in these conditions, and this influence is persistent and

enters into all our acts, conscious or unconscious, voluntary or involuntary.

It follows from the innate necessity of the perception that objects and their extrinsic and intrinsic causes are resolved into living subjects, and are classified in a hierarchy of specific types, which are accepted by the primitive and ignorant mind as the universal mythical forms.* But the necessities of human speech, which is however involved in mythical representations, from the very beginning essentially reflex, require other terms than those of individual and specific animations. It is clear that the simple personifying faculty of the intellect sufficed in its earliest emotions, but that after the slow development of psychical reduplication, and the enlargement of languages and ideas, it no longer satisfied the logical requirements of the mind.

Consequently, explicit,—that is, rational—singular, and specific ideas gradually arose and assumed a definite form; they were interwoven and fused into these individual and specific types, and thus obtained a place in the thoughts and language of primitive man. The gradual intrusion of specific rational ideas is natural to the human mind, since it is logically progressive, and the fact may be observed by those who watch the mental growth of children, and of ignorant and untaught adults.

* This great truth was observed by Vico, the most advanced of modern psychologists, in his views of primitive psychology.

While the mythical intelligence continues as before to give its habitual mythical interpretation of many natural phenomena, the use is gradually acquired of special and generic symbols which express special and specific ideas, and these no longer include a personification of the individual thing or idea. Without this intrusion of rational ideas any progress would be impossible, as well as the power of expressing all which time and education present to the mind, and gradually enable it to comprehend; the fanciful image is fused in a rational conception, which is, however, not yet definite and explicit.

What are commonly termed abstract ideas arise from this necessity, as the result of the perfection and development of speech, but these were not at first abstract, although they made use of the abstract idea. Unconscious abstraction is certainly one of the primary acts of the intelligence, since abstraction follows from the consideration of a part or of some parts of a whole, which are themselves presented as a whole to the perception. But this primitive abstraction was so far a concrete fact for the perception, in that each act of the apprehension constituted a phenomenon of which the apparent character was abstracted from the other parts which formed a whole, and was transformed into a living subject, as we have already shown at length. The really explicit abstraction, to which man only attained after many ages, consisting in the simple representation

of a quality or part of a thing, could not at that time be effected, although special and specific ideas gradually found their way into thought and speech. All the terms for form and relation in primitive speech, and also among modern savages, confirm this assertion, as linguists are aware; the form and relation now expressing an abstract reference to actions and passions in the verbs, nouns, and adverbs, originally referred to a concrete object.

Three modes or degrees of abstract representations occur in the progressive exercise of the intellectual faculty; these, combined with the special apprehensions of the individual memory, and with imaginative types, constitute the life of human thought, and are the conditions by which we attain to rational knowledge. While the specific mythical type may take the place of the general type in the logical exercise of thought, and may suffice for an imaginative comprehension of the system of the world, the abstract conception intervenes in the daily necessity for communication between these general mythical types, and serves to cement them together, thus rendering the commerce of ideas among men and in the human mind more easy.

The abstract conceptions which are formed in this way may be divided into three classes—physical, moral, and intellectual. To begin with the first; it is impossible for human speech to point out and define a subject or phenomenon in the series to which

it belongs by resemblance, identity, or analogy, unless there is already in the mind a conception which includes the general qualities, or quality proper to the series of similar phenomena; this is essentially an abstract type, but it primarily assumes a concrete form. I cannot say that anything is white or heavy, until by repetitions of the same sensation I have been able to combine in a single conception the sensations diffused over an infinite number of objects. The genesis of these conceptions is found in the comparative explicit judgment which depends on the memory for the necessary conditions of its formation.

The typical and abstract idea of white has not merely a nominal value, as it is asserted in some schools of thought, for an empty term could express no idea, whereas this idea is perfectly clear. Neither is it a real thing, but rather an ideal reality, not a pure abstraction of the spirit, extracted, so to speak, from the material substance. The conception of whiteness formed by the comparative judgment is limited by the perception of the concrete, external fact perceived as one special quality among all other qualities in nature, and it is therefore a physiological fact of inward consciousness.

In the abstract idea of white or whiteness we do not only picture to ourselves a quality common to many things, but by this term, and by the idea which corresponds to it, the same sensation is actually present to our inward intuition, or the same quality of

the sensation which was previously generated by our external senses in a concrete form. Although, therefore, the idea is generic, the sensation itself is represented to the mind in the form of a concrete perception. It is not concrete in the sense of belonging to a special object or definite form, as it is presented to the outward perception, but only so far as there is actually an inward and physiological sensation of whiteness, which the word recalls to the memory. There can be no mental confusion with the quality of red, or of any colour, when I speak or think of what is white.

When I speak or think of any object as white, I and others perfectly understand what is meant, and a representation of this quality is instantly formed in our minds, in the generic type which was gradually constituted by primitive man by the combination of numerous special sensations, obvious to the sight, and subsequently expressed in speech.

In order that the word which corresponds to the quality may have a given sense, it is necessary to perceive the form of the concrete sensation which gave rise to it; for although the representation is indefinite or generic, that is, not obvious to the external senses, yet it is not physiologically distinct from the sensation of the quality described; the perception of that quality is present by the aid of memory to the inner consciousness.

It is therefore evident that the physiological elements of consciousness are actually contained in

so-called abstract ideas, although it is sometimes asserted that they are purely spiritual and intellectual acts, remote from every physiological process of fact and sense. An actual physiological fact (colour in this instance) corresponds to the idea in the nervous centres, and reproduces the sensation due to the perception of special objects, whose physical quality of whiteness we have perceived, and this sensation makes part of the abstract, or rather indefinite conception.

In fact, all which is not actually present to the mind—and the present is an infinitesimal fraction of knowledge—is reproduced by the memory, and this is effected by the molecular movements of the human brain, and by what may be called the ethereal modifications which took place when the sensations, perceptions, and acts first occurred. If the cells vibrate, and the organs of the brain are affected by the recollection of past ideas and acts, just as when they actually occurred (and this appears from Schiff's experiences as to the increase of the brain in heat and volume during dreams), this vibration will be still more marked when any quality which affects our senses is reproduced in the mind.

The particular *form* of the quality as it appears in a definite object is certainly wanting in the abstract conception; it remains in the first stage of pure sensation, like a spontaneous act of observation, and it is transformed into apprehension by the mental faculty. But the inward consciousness of the quality

is actual, psychical, and physical. The abstract conception is a psychical symbol composed of idea and consciousness, or rather of act and consciousness; both are fused into a logical conception of indefinite form, yet consisting of real elements, that is, of cerebral motions and of sensations.

Estimated according to its genuine value, therefore, an abstract conception may be divided into three classes—physical, moral, and intellectual. Whiteness and colours in general, levity and weight, hardness, sound, and the like qualities, are all abstract types which belong to the physical class. Goodness, virtue, love, hatred, and anger must be assigned to the moral class; and equality, identity, number, and quantity, etc., to the intellectual class. Such abstract conceptions, without which human speech would be impossible, did not in the case of primitive man take the explicit and reflex form in which they are presented by mature science, and it is expedient to inquire what character they really assumed in the spontaneous exercise of thought and speech.

There is certainly a difference between the mythical and specific types and the intrinsic value of these abstract conceptions. The former served for the causative interpretation of the living system of the world, and had a superstitious influence on the moral and social progress of mankind; the latter were merely the instrument of thought and speech, and were in spontaneous and daily use. But in spite of this

difference, there was no radical and substantial diversity in the genesis of such conceptions, and the fundamental elements of perception were common to both. While the form varied, the primitive law and genesis remained the same.

We have shown that the perception of the phenomenon, as it affects the inner and external consciousness, necessarily involves the form of the subject, and the causative power which animates that form, and this becomes the intellectual source of special and specific myths. These myths, whether they are derived from physical or moral phenomena, are subsequently so completely impersonated as to be resolved into a perfectly human form. In the case of the abstract conceptions necessary in speech, such anthropomorphism does not generally occur; yet we see that sensation and a physiological genesis are inseparable from an abstract conception. Without such sensation of the phenomenon these conceptions would be unintelligible to the percipient himself and to others. In direct sensation, the phenomenon is external, and when it is reproduced in the mind the same cerebral motions to which that sensation was due are repeated.

It is an absolute law, not only of the human mind but of animal intelligence, that the phenomenon should generate the implicit idea of a thing and cause, and the necessity of this psychical law is also apparent in the abstract conception of some given quality. If the effect is not identical, it is at any rate analogous.

Primitive man did not take whiteness, for example, considered in itself, to be an active subject, like the specific natural myths which we have mentioned, but he regarded it as something which had a real existence, and he might under certain circumstances invest it with deliberate power.

If we have fully grasped this deep faculty of the mind, and the spontaneous animation of all phenomena, both external and internal, it will not be difficult to understand the reappearance of the same law in abstract conceptions. The sensation of the quality, and consequently of the phenomenon, is reproduced, and the phenomenon generates the implicit idea of a subject, and therefore of a possible cause in given circumstances. If such a law did not produce upon man the mythical personification of his primitive abstract conceptions, at any rate it involved a belief in the objective reality of these conceptions, which were implicitly held to possess an independent existence.

Among prehistoric and savage races, who were ignorant of the laws and nature of cosmic forces, the greater or less weight of a thing did not involve any examination of the mass of a phenomenon, its distance, and the general laws of gravity; this differential weight was itself believed to be a thing which acted, and sometimes deliberately acted in different ways on the different objects which they were comparing at the moment. In other words, gravity was regarded

as something which existed independently of the bodies in which its properties were manifested.

This estimate of gravity, as an abstract quality or property, might be repeated of all other physical properties, as well as of those abstract conceptions which are moral and intellectual. Goodness came to be considered as a type, varying indeed in different peoples, according to their race, and their local, moral, and civil conditions, but as a type which corresponded to the mutual relations of men, and to their superstitions and religious beliefs as to the nature of things.

In this case also the abstract conception of the good, the fitting, the useful, which constantly recur in popular speech are regarded, not as mythical powers personified in a human form, but as having a real existence in nature, as something extrinsic to the person or thing in which they are manifested, and as acting upon them as a living and causative power. The same may be said of all other abstract conceptions. Hence, in addition to the formation of cosmic, moral, and intellectual myths, fashioned after the pattern of humanity, logical conceptions arose in the mind, necessary for the exercise of human speech and for a man's converse with himself, and these were regarded as having a real existence, manifested in things and persons and in the system of nature. These entities have their origin in the same faculty as the others; in every conception presented to the mind and reproducing the primitive sensation

or emotion, the external or internal phenomenon implicitly generates the subject, and with this the cause. These abstract conceptions did not and do not result in the anthropomorphism of phenomena or ideas, but are transformed into entities which have a real existence.

We must also observe the mobility and interchangeableness of these fetishes, myths, and imaginary entities in the primitive times of the human race, and even in later ages; at one time the fetish acts as a myth, at another the myth has a logical existence. Of this there are many proofs in the traditions of ancient peoples, in the intellectual life of modern savages, and in that of the civilized nations to which we ourselves belong. The historic development does not always follow the regular course we have just described, although these are, in a strictly logical sense, the necessary stages of intellectual evolution. Historically they are often jostled and confounded together by the lively susceptibility and alacrity of the imagination of primitive man, and it is precisely this characteristic which makes these marvellous ages so fertile in fanciful creations, and also in scientific intuitions.

Any one who is sufficiently acquainted with the ancient literature of civilized peoples, and with the legends of those which are rude and savage; any one who has reflected on the spontaneous value of words and conceptions in modern speech, must often have observed how myth assumed the form of a logical

conception as time went on; and conversely how the logical entity assumed the form of a myth, and how interchangeable they are. It is well known that the myths have been so far adapted to the necessities of speech as to be transmuted into verbs; *libare* from *liber*, which perhaps came in its turn from *liba*, a propitiatory cake, while *Libra* was the genius who in mythological ages presided over fruitfulness and plenty. So again *juvare*, from the root *jov*, after it had already been used for the anthropomorphic *Jove*. We find in Plautus the verb *summanare*, from the god *Summanus*, the nocturnal sky. Not only verbs but adjectives were derived in common speech from the mythical names of gods; from *Genius*, a multiform and universal power in ancient Latin mythology, we have *genialis*, and hence the expressions *genialis lectus*, *genialis homo*, *genialis hiems*, and poets and philosophers apply the same epithet even to the elements and the stars. On the other hand, Virtue, Faith, Piety, and other like moral conceptions, first regarded as real, yet impersonal entities, were transformed into a perfect myth, and into human forms worthy of divine worship.

Even in our own time, and not only among the uneducated people but among men of high culture—when they do not pause to consider the real value of words in the familiarity of daily conversation—any one who seeks for the direct meaning of the terms he uses will admit the truth of what I say. We constantly ascribe

a real existence to abstract conceptions and qualities, treating them as subjects which have a substantial being, and which act for the most part with deliberate purpose, although they are not transformed as in the case of myths into human shapes.

In abstract, intellectual conceptions, such as those of equality, distance, number, and the like, the same faculty and the same elements are at work as in those which express physical and moral qualities. These conceptions, which as civilization advances ultimately become mere intellectual symbols necessary for logical speech, are at first formed by the actual comparison of things, and therefore by the aid of the senses. Even if we were to assert with some schools of thought that they were formed *a priori* in the mind, sensation would still be necessary as the occasion of displaying them. When such conceptions are expressed in words there is a physiological recurrence to the mind of what may be termed the shadow of previous sensations or perceptions, which are united in an intellectual type to give rise to such conceptions. And in the appearance of this phenomenal basis, thought unconsciously fulfils the fundamental law of assuming, or I might say of actually *feeling*, the reality of the subject.

It must be remembered that in speaking of these entities created by the intellect, I refer to the primitive ages of human thought, or to the notions of ignorant people, and also to the spontaneous language of educated men, who in ordinary conversation do not

pause to consider the simple and logical value of their expressions. We are only giving the natural history of the intelligence, which necessarily excludes the analytic and refining processes of rational science. An educated man will, for example, say or write that identity is a most important principle of logic as well as that of contradiction, although he is perfectly aware that such expressions only imply an abstract form of cognition; he follows the natural and primitive process of the intellect, and for the moment expresses these conceptions as if they were real entities in the organism of science and of the world. Any one may find a proof of this fact in himself, if he will consider the ideas immediately at work in his mind at the moment of expressing similar conceptions. And if this is true of those who pursue a rational course of thought, it is true in a still more imaginative and mythical sense at the dawn of intellectual life, both among modern savages and in the case of the ignorant common people.

Let us briefly sum up the truth we have sought to establish. Special fetishes first had their origin by the innate exercise and historical development of the human intelligence, by the necessary conditions of the perception, and of subsequent apprehension; these were only the animation of each external or internal phenonemon, as it occurred, and this was the primitive origin of myth, both in man and animals. In the case of animals the fetish or special

myth is transitory, appearing and disappearing in accordance with his actual perceptions; while in man there is a persistent image of the fetish in his mind, to which he timidly ascribes the same power as to the thing itself. The specific types of these fetishes naturally arise from the mental combination of images, emotions, and ideas into a whole, and these impersonations generate the various forms of anthropomorphic polytheism. As the synthetic mental process goes on, these varied forms of polytheism are gradually united in one general but still anthropomorphic form, which is commonly called monotheism.

In addition to these spontaneous and anthropomorphic myths, which serve for the fanciful explanation of the system of the world, and the moral ideas of social and individual life, other myths arise which are not anthropomorphic, but which ascribe a substantial existence to abstract conceptions of physical, moral, or intellectual matters; conceptions necessary for the formulation of human speech. For although primitive languages, of which we have some examples remaining in the language of savage peoples, are almost inconceivably concrete, yet speech is impossible without expressions of form, or abstract conceptions which are moulded and adapted to that intuition of the relations of things which is always taking place in the mind.* The mythical human

* In Chinese, for example, and in many other languages, there are many words to indicate the tail of a fish, a bird, etc., but no word for a

form does not indeed appear in these conceptions, but a substantial entity is involved in them which sometimes, as we have seen, may even assume the aspect of a complete myth.

A careful analysis of the process of our intelligence has shown that this habitual personification of the phenomenon or abstract conception is due to the innate faculty of perception, since the appearance of any phenomenon necessarily produces the idea of a subject actuated by deliberate purpose; this law is equally constant in the case of animals, in whom, however, it does not issue in a rational conception. The objection of ourselves into nature, the personification of its phenomena and myths in general, are common to all, while they take a more fanciful form in the case of primitive man; they are the constant and necessary result of the perception of external and internal phenomena. This personification includes moral and intellectual as well as physical phenomena, and it always proceeds in the same way, from special phenomena to specific types, and hence to abstract perceptions.

In this way we have established the important fact

tail in general. Even an intelligent savage does not accurately distinguish between the subjective and the objective, between the imaginary and the real; this is the most important result of a scientific education. Tylor, *Primitive Culture;* Steinhauser, *Religion des Nègres;* Brinton, *Myths of the World.* The objective form of conceptions and emotions, which are subsequently transformed into spirits, are found among the superior races of our day, in the Christian hierarchy of angels, in popular tradition, and in spiritualism.

that the primitive personification of every external or internal phenomenon, the origin of all myths, religions, and superstitions, is accomplished by the same necessary psychical and physical law as that which produces sensation. That is, men, as well as animals, begin by thinking and feeling in a mythical way, owing to the intrinsic constitution of their intellectual life; and while animals never emerge from these psychical conditions, men are gradually emancipated from them, as they become able to think more rationally, thus finding redemption, truth, and liberty by means of science.

We now propose to unite in a single conception this necessity of our intellect, at once the product and the cause of perception, and of the spontaneous vivification of phenomena; since the law may be expressed in a compendious form.

Both in physical, moral, and intellectual myths, and in the substantial entity infused into abstract conceptions, the external or internal phenomenon immediately generates the idea of a subject, since it is a fundamental law of our mind to *entify* (*entificare*) every object of our perception, emotion, or consciousness. If any one should object to this neologism, in spite of its adequate expression of the original function of the intelligence, we reply that the use and necessity of the verb *identify* have been accepted in the neo-Latin tongues, and therefore *entify*, which has the same root and form, can hardly be rejected, since it, like the

former, signifies an actual process of thought. We therefore adopt the word without scruple, since new words have often been coined before when they were required to express new conceptions and theories.

The primitive and constant act of all animals, including man, when external or internal sensation has opened to them the immense field of nature, is that of *entifying* the object of sensation, or, in a word, all phenomena. Such *entification* is the result of spontaneous necessity, by the law of the intrinsic faculty of perception; it is not the result of reflection, but it is immediate, innate, and inevitable. It is an eternal law of the evolution of the intelligence, like all those which rule the order of the world.

We do not only proclaim in this fact a law of psychological importance, but also the origin of myths, and in a certain sense of science, since myth is developed by the same methods as science. These two streams flow from one and the same source, since the *entification* of phenomena is proper both to myth and science; the former *entifies* sensations, and the latter ideas, since science by reversion to law and rational conception finally attains to the primitive entity. And finally, if an imaginative idea of a cause is active in myth from the first, the conception of a cause is equally necessary to science. It is her business to explain the reason of things, and in what they rationally consist:

"Felix qui potuit rerum cognoscere causas."

CHAPTER VII.

THE HISTORICAL EVOLUTION OF MYTH AND SCIENCE.

In the foregoing pages we have reached the primordial fact of our psychical and physical nature, in which, as it appears to us, both myth and science have their origin. After first considering the animal kingdom as a whole, we have seen that the interaction between external phenomena and the consciousness of an organism results in the spontaneous vivification of the phenomenon in question, so that the origin of the mythical representation of nature is found in the innate faculty of animal perception.

Nor could it be otherwise. The internal activity and intrinsic sense of conscious and deliberate life which inspires animals and men, while the latter are still ignorant of the rational order of things, is necessarily reflected both in the external objects of perception and in the internal emotions, as if they were operating causes independent of the will of the percipient. It is impossible for an animal, which is unable by voluntary observation to make any

analytic distinction between the subject and the object, and their respective effects, to consider such phenomena as mechanical entities, subject to necessary and eternal laws. The animal therefore accepts the idea suggested by his spontaneous and subjective nature, that these phenomena are alive. Grass, fruits, plants, water, the movement of material bodies, ordinary and extraordinary meteors, all are implicitly apprehended by him as subjects endowed with will and purpose after the manner of mankind. Nor can the living subjectivity of the phenomenon ever be gauged by the animal in whom the deliberate power of reflection is wanting. His life is consequently passed in a world of living subjects, not of phenomena and laws which mechanically act together; it is, so to speak, a permanent *metaphor*.

Man himself, so far as his animal nature is concerned, acts in the same way, and although he subsequently attains to the exercise of reasoning powers in virtue of the psychical reduplication of himself, the primitive faculty persists, and hence comes the mythical creation of a peculiar world of conceptions which give rise to all superstitions, mythologies, and religions. This is also the process of science itself, as far as the classifying method and intrinsic logical form are concerned. The historical source of the two great streams of the intellect, the mythical and the scientific, is found in the primitive act of *entifying* the phenomenon presented to the senses.

We must briefly describe the evolution of these two mythical and scientific faculties of the mind; we must investigate the mode and cause of their divergence from a common source, through what transformations they pass, in order to see in what way the one is gradually dried up, while the other increases in volume and force. The reader must forgive us if we use some repetition in developing a subject on which we have already touched, since without such repetition the present historical explanation would be obscure.

The first stage of knowledge consists in the observation of the things which surround us, and this first stage, which is necessary also in science, is the common property of animals. Their observation of themselves and of external things is psychologically and physiologically the same as that of man, and in both cases there is a subjective animation of the phenomena themselves. The primitive source of science in its observation of phenomena was the same as that of myth and of the special fetish; without such observation it would have had no existence.

In immediate succession to this primitive fact, which is common to the whole animal kingdom, there arose—if we consider the general process without the limitations of circumstances, places, time, and a thousand accidents—two kinds of faculties which were identical in form, although they had different effects, and produced opposite results. For in the case of

mythical entification the tendency to impersonation was always increasing and becoming more distinctly zoomorphic and anthropomorphic, and in this form it was crystallized or mummified, while science on the other hand was always enlarging its sphere and dissipating the first mythical form of its conception, until nothing was left but a purely rational idea.

When this evolution takes place in peoples and races which are incapable of improvement, or have a limited capacity for advanced civilization, the faculty of myth remains in the ascendant; and as past and present history shows, mythical stagnation and intellectual barrenness may follow, until intellectual development is arrested and even destroyed. If on the other hand the evolution takes place in peoples and races capable of indefinite civilization, myth gradually disappears and science shines forth victoriously.

Even in historical and civilized races the two cycles go on together, since while robust intellects throw off as they advance the mythical shell in which they were first inclosed, the ignorant masses continue their devotions to fetishes and myths, which they can infuse even into the grandest religious teaching. They perhaps might also perish, crystallized in their miserable superstitions, unless, in virtue of the race to which they belong, the nobler minds were gradually to succeed in illuminating and raising them into a purer atmosphere. In our Aryan race and

in our own country we have all seen the ideas of Christianity transformed into the earlier fetishes and pagan myths; the saints are merely substituted for the gods and demi-gods, for the deities of groves, of the sea and of war, as they are found in ancient mythology. The legends of the saints and of Christ himself are grafted on similar legends of the ancient religions of Greece and Rome, and Paradise has assumed the appearance and form of Olympus. The paintings still extant in the catacombs of Rome, which mark the transformation of the old into the new religion, speak plainly enough by their symbols and figures.

Myth is logically identical with the scientific process in its intrinsic character; starting from a vague subjectivity which gradually assumes a human shape, the first intellectual vitality is lost, unless it is revived by a higher impulse. Science, on the other hand, which begins in myth, gradually divests this subjectivity of its anthropomorphic character, until pure reason is attained, and with this the power of indefinite progress.

The theory which has hitherto been generally accepted by mythologists, even by those who profess Comte's great principle of historical evolution, is that man began with special fetishes, that these were combined in comprehensive types to form polytheistic hierarchies, and hence he rose by an analogous process to a more or less vague conception of monotheism.

This theory, true as to the principal forms which myth successively assumes, is not accurate with respect to the stages of development, and it is also erroneous in some particulars of the actual history of the various mythologies of different peoples.

In the early chapters of this work we have briefly touched on such a development, and the reader must pardon us for returning to the subject, now that we have to give an historical account of the process of evolution. In fact, the fetish, in the general sense of the term, is not the first form of myth which is revealed in the dawn of human life. In order to estimate its positive value, it is necessary to analyze such a conception with greater accuracy, and then to verify it historically with the help of the science of ethnology.

The first manifestations of mythical ideas must be considered in man as an animal; that is, as the result of his spontaneous intercourse with the world, independently of the psychical faculty peculiar to himself, after he had acquired by subsequent evolution of mind and body the faculty and habit of reflection. This first stage does not involve any definite fetish, that is, an immediate belief in a special object which exerts its influence on the human soul, even when it is remote and unseen: such a fetish is a secondary stage in human development. The first mythical representations of animals, and of man, so far as his animal nature is concerned, are not confined to fixed

objects, which can be retained in the mind as operative under all circumstances; they are indefinite, and diffused through all the phenomena which are successively perceived and vivified. The unseen wind which rises and falls, the moving cloud, the flash of lightning and roar of thunder, the dawn, the rushing torrent—when any of these things are perceived by animals and primitive men, they are endowed with subjective life and are supposed to act with deliberate purpose; and this is the first form of myth. But when they are not present (I here speak of the animal nature of man) they do not remain in the mind as persistent beings to which the tribute of worship inspired by hope or fear must be paid; these and other phenomena only inspire such sentiments when they are actually present.

It is no vain distinction which I make between the first vague and intermittent form of myth suggested by phenomena actually present, and that of the first stage of fetish: this distinction marks the difference between the mythical representation of animals and the classifying and reflective process peculiar to man.

Comte was the first to remark, quite incidentally, that animals might sometimes attain to the idea of a fetish; Darwin gave the instance of a dog which was scared by the movement of an open umbrella in a meadow, although he remained quiet when it was unshaken by the wind; and Herbert Spencer, partly

accepting these ideas, adduces two somewhat similar instances of the behaviour of dogs. It seems to us that these great men are mistaken on the one hand in assuming that the first essential origin of myth is not to be found in the animal kingdom, and on the other in supposing that these facts have only an *accidental* value, and that animals only occasionally acquire a vague consciousness of the fetish.

Those readers who have gone with us so far will perceive that these were not mere accidents of rare occurrence in animal life, but that they are the necessary effect of mythical representation in its first stage, although they cannot in any way be supposed to be produced by fetishism, properly so called. For if the dog were frightened and agitated by the movement of the umbrella, or ran away, as Herbert Spencer tells us, from the stick which had hurt him while he was playing with it, it was because an unusual movement or pain produced by an object to which habit had rendered him indifferent, aroused in the animal the congenital sense of the intentional subjectivity of phenomena, and this is really the first stage of myth, and not of its subsequent form of fetishism.

I must therefore repeat that the first form of myth which spontaneously arises in man as an animal, is the vague but intentional subjectivity of the phenomena presented to his senses. This subjectivity is sometimes quiescent and implicit, and

sometimes active, in which case it may arouse the fear of evil, or the hope of physical pleasures.

As in man the reflex power slowly and gradually grows—although at first in an exclusively empirical form—so he slowly and gradually accepts the first form of fetishism, which consists in the permanent and fixed individuation of a phenomenon or object of nature, as a power which he reflectively believes to be the artificer of good or evil.

In this stage it is no longer the phenomenon actually present which arouses the apprehension of an intentional subjectivity, while its image and efficacy disappear with the sensible object; the phenomenon, or the inanimate or animate form, is reflectively retained by the memory, in which it appears as a malignant or benignant power. In a word, the first stage of fetishism, which is the second form of the evolution of myth, is the universal and primitive sense of myth in nature, which man alone is capable of applying permanently to some given phenonemon, such as wind, rain, and the like, or lakes, volcanoes, and rocks, and these remain fixed in the mind as powers of good or evil. In the earlier stage of myth the scene is constantly changing, while in the latter, certain objects or phenomena remain fixed in the memory, exciting the same emotions whether they are present or absent, and to this consciousness we may trace the dawn of worship.

Ethnography affords plain proofs of the fetishism

which preceded the civilization of many peoples, and among those which still remain in the stage of fetishism we can trace the primitive form of a vague impersonation of natural objects and phenomena.*

As we have already seen, every animal and unfamiliar object is in this first stage of fetishism regarded as the external covering of a spiritual power which has assumed what is believed to be the primordial form of the fetish; this fetish takes the place of the natural phenomenon, and is believed to be capable of exercising a direct subjectivity which is vague but perfectly real.

We pass from this first form of fetish to the second, namely to the veneration of objects, animals, plants, and the like, in which an extrinsic power is supposed to be incarnated. Many ages elapsed before man attained to this second stage of fetishism, since it was necessarily preceded by a further and reflex elaboration of myth, namely, the genesis of a belief in spirits.

Herbert Spencer and Tylor are among the writers who have given a masterly description of this phase of the human intellect, and history and ethnography

* Fetishism may be observed in the civilized Aryan races, but still more plainly among the Chinese and cognate races, among the Peruvians, Mexicans, etc. Castren, in his *Finnische Mythologie*, says that we find extraordinary instances of the lowest stage of fetishism among the Samoeides, who directly worship all natural objects in themselves. The Finns, who are comparatively civilized heathens, have attained to a higher phase of belief. But numerous examples, in every part of the world, will occur to the intelligent reader.

have confirmed the accuracy of their researches and conclusions. The shadow cast by a man's own body, the reflection of images in the water, natural echoes, the reappearance of images of the departed in dreams, the general instinct which leads man to vivify all he sees, produced what may be called the reduplication of man in himself, and the savage's primitive theory of the human soul. Originally this soul was multiplied into all these natural phenomena, but it was afterwards distributed by the mythical faculty into three, four, five, or more powers, personifying the spirits. This belief in a multiplicity of souls in man is not only still extant among more or less rude peoples of the present day in Asia, Europe, Africa, America, and Polynesia, but it is also the foundation of the belief of more civilized nations on the subject, including our own Aryan race. Birch and others observe that the Egyptians ascribed four spirits to man—Ba, Akba, Ka, and Khaba. The Romans give three :

"Bis duo sunt homines, manes, caro, spiritus, umbra."

The same belief is found among nearly all savages. The Fijians distinguish between the spirit which is buried with the dead man and that more ethereal spirit which is reflected in the water and lingers near the place where he died. The Malagasy believe in three souls, the Algonquin in two, the Dakotan in three, the native of Orissa in four.

Since a fetish, strictly so called, is the incarnation

of a power in some given object, it must be preceded by this rude belief in spirits and shades. Such a complex elaboration takes time, since it involves a previous creation of powers, spirits or the shades of men; these lead to the belief in independent spirits of various origin, which people the heavens and all parts of the world. Hence arose the belief in transmigration, the necessary prelude to the theory of the incarnation, which was ultimately constituted by fetishism. The comparative study of languages shows that including the Aryan and Semitic races, the belief in spirits was developed in all peoples, and in all of them we also find a belief in the transmigration of souls.

The transmigration of the human soul was first believed to take place in the body of a new-born child, since at the moment of death the soul of the dying person entered into the fœtus. The Algonquins buried the corpses of their children by the wayside, so that their souls might easily enter into the bodies of the pregnant women who passed that way. Some of the North American tribes believed that the mother saw in a dream the dead relation who was to imprint his likeness on her unborn child. At Calabar, when the mother who has lost a child gives birth to another, she believes that the dead child is restored to her. The natives of New Guinea believe that a son who greatly resembles his dead father has inherited his soul. Among the Yorubas

the new-born child is greeted with the words: "Thou hast returned at last!" The same ideas prevail among the Lapps and Tartars, as well as among the negroes of the West Coast of Africa. Among the aborigines of Australia the belief is widely diffused that those who die as black return as white men.

Primitive and ignorant peoples perceive no precise distinction between man and brutes, so that, as Tylor observes, they readily accept the belief of the transmigration of the human soul into an animal, and then into inanimate objects, and this belief culminates in the incarnation of the true fetish. Among some of the North American tribes the spirits of the dead are supposed to pass into bears. An Eskimo widow refused to eat seal's flesh because she supposed that her husband's soul had migrated into that animal. Others have imagined that the souls of the dead passed into birds, beetles, and other insects, according to their social rank when still alive. Some African tribes believe that the dead migrate into certain species of apes.

By pursuing this theory, as we shall presently show more fully, the transition was easy to the incarnation of a spirit, whether that of a man or of some other being, into any object whatever, which was thereby invested with beneficent or malignant power. It is easy to show that in this second stage of fetishism, which some have believed to be the primitive form of myth, there would be no further progress in the

mythical elaboration of spirits, their mode of life, their influence and possible transmigrations. This elaboration is indeed a product of the mythical faculty, but in a rational order; it is a logical process, mythical in substance, but purely reflective in form. For which reason it was impossible for animals to attain to this stage.

Some peoples remained in this phase of belief, while others advanced to the ulterior and polytheistic form. This may also be divided into two classes; those who classify and ultimately reduce fetishes into a more general conception, and those whose conception takes an anthropomorphic form. Let us examine the genesis of both classes.

When the popular belief in spirits had free development, the number of spirits and powers was countless, as many examples show. To give a single instance—the Australians hold that there is an innumerable multitude of spirits; the heavens, the earth, every nook, grove, bush, spring, crag, and stone are peopled with them. In the same way, some American tribes suppose the visible and invisible world to be filled with good and evil spirits; so do the Khonds, the Negroes of New Guinea, and, as Castren tells us, the Turanian tribes of Asia and Europe. Consequently, fetishes, which are the incarnation of these spirits in some object, animate or inanimate, natural or artificial, are innumerable, since primitive man and modern savages have created such

fetishes, either at their own pleasure or with the aid of their priests, magicians, and sorcerers.

Man's co-ordinating faculty, in those races which are capable of progressive evolution, does not stop short at this inorganic disintegration of things; he begins a process of classification and, at the same time, of reduction, by which the numerous fetishes are, by their natural points of likeness and unlikeness in character and form, reduced to types and classes, which, as we have already shown, comprise in themselves the qualities of all the particular objects of the same species which are diffused throughout nature.

By this spontaneous process of human thought, due to the innate power of reasoning, man has gradually reduced the chaos of special fetishes to a tolerably systematic order, and he then goes on to more precise simplification. Let us try to trace in this historic fact the classifying process at the moment when the first form of polytheism succeeds to irregular and anarchical fetishism.

In the Samoan islands, a local god is wont to appear in the form of an owl, and the accidental discovery of a dead owl would be deplored, and its body would be buried with solemn rites. The death of this particular bird does not, however, imply the death of the god himself, since the people believe him to be incarnated in the whole species. In this fact we see that a special fetish is developed into a

specific form; thus a permanent type is evolved from special appearances.

Acosta has handed down to us another belief of the comparatively civilized Peruvians, which recalls the primitive genesis of their mythical ideas. He says that the shepherds used to adore various stars, to which they assigned the names of animals; stars which protected men against the respective animals after whom they were called. They held the general belief that all animals whatever had a representative in heaven, which watched over their reproduction, and of which they were, so to speak, the essence. This affords another example of the more general extension and classification, and, at the same time, of the reduction of the original multitude of fetishes.

Some of the North American Indians asserted that every species of animal had an elder brother, who was the origin of all the individuals of the species. They said, for example, that the beaver, which was the elder brother of this species of rodents, was as large as one of their cabins. Others supposed that all kinds of animals had their type in the world of souls, a *manitu*, which kept guard over them. Ralston, in his "Songs of the Russian People," tells us that Buyan, the island paradise of Russian mythology, contains a serpent older than all others, a larger raven, a finer queen bee, and so of all other animals. Morgan, in his work upon the Iroquois,

observes that they believe in a spirit or god of every species of trees and plants.

From these beliefs and facts, drawn from different peoples and different parts of the world, we can understand how a vague and inorganic fetishism gradually became classified into types which constitute the first phase of polytheism. The logical effort which transformed the manifold beliefs into types goes on, but from their vague and indefinite nature, not only the power, but also the extrinsic form of man is easily infused into them, so that they are invested with human faculties and sensations, and also with the anthropomorphic form and countenance of which we have spoken elsewhere. In fact, when the special fetishes which are naturally alike are united in a single type, the object, animal, or phenomenon which corresponds to it in this early stage of polytheism is no longer perceived, but a *numen* is evolved from this type, which has not only human power, but a human form; and hence follow the specific idols of serpents, birds, and all natural phenomena, in which the primitive fetish has been incarnated.*

In this second stage of polytheism, anthropomorphism appears in an external form, and the

* *Numen* really means the manifestation of power, from *nuere*. Varro makes Attius say: "Multis nomen vestrum numenque ciendo." In Lucretius we have *mentis numen*, and also *Numen Augusti*. An inscription discovered by Mommsen runs as follows:

"P. Florus, etc. Dianae numine jussu posuit."

specific type is transformed into the idol which represents and dominates over it, inspiring the commission of beneficent or hurtful acts. Of this it is unnecessary to adduce examples, since all the mythologies which have reached this polytheistic stage are anthropomorphic, and in these the specific type, which serves as the first step to polytheism, subsequently becomes a completely human idol.

After this anthropomorphic classification has been reached by logical elaboration, a new field is opened for the reduction of special types into those which are more general, as had been previously the case in the early stages of myth. By continually concentrating, and at the same time by enlarging the value of the conception, it is united in a single form which constitutes the dawn and genesis of monotheism. This methodical process, which is characteristic of human thought, may be traced in all peoples which have really attained to the monotheistic idea, in the Aryan and Semitic races, in China, Japan, and Egypt, in Peru and Mexico; the belief may also be obscurely traced in an inchoate form among savage and inferior tribes, as, for example, among the Indians of Central and North America, and among some of the inhabitants of Africa and barbarous Asia.

While this conception took a more or less definite form among the more advanced peoples, the earlier and debased myths maintained their ground, and

still continue to do so. Of this we have examples in Europe itself, and among its more civilized peoples which have been transplanted elsewhere; for while in one direction a capacity for classification leads to a purer monotheistic conception, and even to rational science, the great majority of the common people, and even of those of higher culture, still hold many ideas which are polytheistic and anthropomorphic, and some which really belong to the debased stage of fetishism and vulgar superstition.

Other causes contribute to produce the natural and intrinsic concurrence of the several stages of myth which are found existing together in the life of a people. Such, for example, is the conquest effected by a more civilized nation over another race, inferior by nature or retarded by other circumstances. The mythical ideas of the conquered people remain, and are even diffused through the lower classes of the conquering race; or they are ingrafted by a synthetic and assimilating process, so as to modify other mythical and religious beliefs. This compound of various stages and various beliefs also occurs through the moral and intellectual diffusion of dogma, without the acquisition of really new matter. Manifest proofs of these various stages of myth, co-existent together, may be traced in the development of the Vedic ideas among the earlier aboriginal nations, and conversely; as in the case of the Aztecs and Incas in Mexico and Peru, whose earlier beliefs were mixed

with those of their conquerors. The same thing may be observed in the development of Judaism during the Babylonish captivity, in the biblical and messianic doctrines which were grafted on pagan beliefs, and in the teaching of Islam, as it was adopted in the East and among the black races of Africa.

We must make allowance for these extrinsic accidents if we are to describe correctly the natural course and logical evolution of myth. Even with respect to the special evolution of myth in a separate people, unmixed with others, while it is normal in what may be termed its general form and categorical phases, yet like all natural objects and phenomena, and much more in all which concerns the human mind, there are variations in its forms, and it attains its ends by many ways.

If we take a wider view of the general and reciprocal influences of ethnic myths; as respects the historic results of mythologies, we shall see that if every race evolved its sphere of myth in accordance with the canons laid down by us, their effect upon each other would work together for a common result more quickly than when each is taken apart. The reader must allow me to make my meaning clear by the following passage from my work on the "Dottrina razionale del Progresso," which I published in 1863, in the "Politecnico," Milan, on the fusion of the monotheistic conception of the Semitic race with the beliefs of Greece and Rome at the dawn of Christianity:—

"Christianity was originally based on the absolute idea of the divine first Principle, to which one portion of the Semitic race had attained by intellectual evolution, and by the acumen of the great men who brought this idea to perfection. Either because of their clearer consciousness, or from their environment and the physical circumstances of the race, the Semitic people passed from the primitive ideas of mythology to the conception of the absolute and infinite Being, while other races still adhered to altogether fanciful and anthropomorphic ideas of this Being. Our race had an Olympus, like the others, and throughout its history this Olympus was always assuming new forms, although a human conception was the basis of its religious ideas. The Chinese and Semitic races were the first to rise to the conception of an absolute first principle, but in both cases the conception was more or less unfruitful.

"The gradual transition from consciousness to conception, from the fact to the idea, from the idol to the law, from the symbol to the thought, from the finite to the infinite, is the characteristic and essential course taken by the human mind. But, practically, this process is more gradual or more rapid, is retarded or advanced, attains its aim or stops short in its first rudiments, according to the race in which it occurs. So it was that, as we have just said, the Chinese and Semitic races were the first to reach the final goal of this psychological progress; other

peoples, such as the Aryans and their offshoots, savages and partially civilized races, remained in the early stages of this dialectic scale. Undoubtedly, in our own race, the early religious conceptions which constituted a simple worship of nature in various forms were constantly becoming of purer character, and they were not only exalted in their spiritual quality, but in the Greek and Roman religions they attained to something like scientific precision. Yet even in these higher aspirations the race did not surrender its mythical faculty, to which it was impelled by its physical and psychological constitution, and the pure conception was unconsciously overshadowed by symbolic ideas. We can plainly see how far this symbolism, peculiar to the race, obscured the minds of Plato and Aristotle, and of almost all the subsequent philosophers. In the Semitic and Chinese races this inner symbolism of the mind, with reference to the interpretation of nature, was less tenacious, intense, and productive, and they soon freed themselves from their mental bonds in order to rise to the conception of the absolute Being, distinct from the world. When this idea had been grasped by rude and popular intuition, men of the highest intellectual power perfected the still confused conception, and founded upon it science, civil and political institutions, and national customs.

"The idea of Christianity arose in the midst of the Semitic people through him whose name it bears,

and who perfected the religious idea of his nation. This idea, in its Semitic simplicity, consisted in a belief in the existence of one, eternal, infinite God, the immediate creator of all things; it included the tradition of man's loss of his original felicity, and the promise of a restoration of all peoples, and of the Israelites in particular, to their former condition of earthly happiness. Christ appeared, and while he upheld the Mosaic law and its original idea, he declared himself to be the promised deliverer, sent of God; the Son of God, which among the Semitic people was the term applied to their prophets. His moral teaching gave a more perfect form to the old law, and by his example he afforded a model of human virtue worthy of all veneration; the germs of a marvellous civilization were to be found in his moral and partially new teaching. The same doctrine had been, to some extent, inculcated by the Jewish teachers, and the schools of Hillel and Gamaliel were certainly not morally inferior to his own, as we learn from the tradition of the Talmud, and from some passages in the Acts of the Apostles. The origin, development, and teaching of primitive Christianity were therefore essentially Semitic, since it had its origin in a people of that race, and in a man of that people. Yet the Semitic race did not become Christian; and, after so many ages have elapsed, it still rejects Christianity. It was the Aryan race, to which we Europeans belong, which adopted

this teaching and became essentially Christian, although this race is psychologically the most idolatrous of the world, as far as the æsthetic idol —not the common fetish—is concerned. Let us inquire into the cause of this remarkable fact.

"As soon as the teaching of Christ was adopted by those familiar with Aryan civilization and opinions, an idea repugnant to Semitic conceptions, and still unintelligible to that race, was evolved from it—I mean the idea that the human Christ, the Son of God, was God himself. The Semite holds that God is so far exalted above all creation, so great and eternal in comparison with the littleness of the world and of man, that God incarnate is not merely a blasphemy but an unmeaning and absurd phrase. Such a dogma was therefore energetically repudiated, and the Semitic race submitted to persecution and dispersal rather than accept it. This is the real reason why Christianity has not been received and will never be received by the Semitic race. When Mahomet reorganized and perfected the Arab creed, he preserved intact the Semitic principle of the absolute and incommunicable nature of God: the Semitic religion has ever held that there is one God, and his prophet.

"On the other hand, Christianity was rapidly diffused among the Greek and Latin peoples, and in all parts of Europe inhabited by our race: even savages and barbarians accepted more or less frankly a

doctrine rejected by the Semites in whom it had its origin. Many and various causes have been assigned for this rapid diffusion of the new doctrine, and the old Greek and Latin fathers ascribed it to the fact that men's minds had been naturally and providentially prepared for it. It was attributed by others to the miseries and sufferings of the slave population, and of the poor, who found a sweet illusion and comfort in the Christian hope of a world beyond the grave. Some, again, suggest the omnipotent will of a tyrant, or the extreme ignorance of the common and barbarous people. Although all these causes had a partial effect, they were secondary and accidental. The true and unique cause lay deeper, in the intellectual constitution of the race to which Christianity was preached; just as physiological characteristics are reproduced in the species until they become permanent, so do intellectual inclinations become engrained in the nature.

"We have said that our race is æsthetically more mythological than all others. If we consider the religious teaching of various Aryan peoples, from the most primitive Vedic idolatry to the successive religions of Brahma and Zend, of the Celts, Greeks, Latins, Germans, and Slavs, we shall see how widely they differ from the religious conceptions and ideas of other races. The vein of fanciful creations is inexhaustible, and there is a wealth of symbolic combinations and a profusion of celestial and semi-celestial

dramas. The intrinsic habit of forming mythical representations of nature is due to a more vivid sense of her power, to a rapid succession of images, and to a constant projection of the observer's own personality into phenomena. This peculiar characteristic of our race is never wholly overcome, and to it is added a proud self-consciousness, an energy of thought and action, a constant aspiration after grand achievements, and a haughty contempt for all other nations.

"The very name of Aryan, transmitted in a modified form to all successive generations, denotes dominion and valour; the Brahmanic cosmogony, and the epithet of apes, given to all other races in the epic of Valmiki, bear witness to the same fact; it is shown in the slavery imposed on conquered peoples, in the hatred of foreigners felt by all the Hellenic tribes; in the omnipotence of Rome, the haughtiness of the Germanic orders; in the feudal system, in the Crusades; and finally, in the modern sense of our superiority to all other existing races. The quickness of perception, and the facile projection of human personality into natural objects, led to the manifold creations of Olympus, and this was an æsthetic obstacle to any nearer approach to the pure and absolute conception of God, while the innate pride of race was a hindrance to our humiliation in the dust before God. The Semites declared that man was created in the image of God, and we created God in our own image; while conscious of the power of the *numina* we confronted

them boldly, and were ready to resist them. The Indian legends, and those of the Hellenes, the Scandinavians, and the whole Aryan race, are full of conflicts between gods and men. The demi-gods must be remembered, showing that the Aryans believed themselves to be sufficiently noble and great for the gods to love them, and to intermarry with them. Thus the Aryan made himself into a God, and often took a glorious place in Olympus, while he declared that God was made man.

"We might imagine that the doctrine of God incarnate would be as repugnant to the ideas, feelings, and intellect of the Aryan as it was to the Semitic race. But the anthropomorphic side of Christianity was readily embraced by the former as a mythical and æsthetic conception, and indeed it was they who made a metaphorical expression into an essential dogma: the pride natural to the Aryan race made them eager to accept a religion which placed man in a still higher Olympus: a belief in Christ was rapidly diffused, not as God but as the Man-God. These are the true reasons, not only for the rapid spread of Christianity in Europe, but also for the philosophic systems of the Platonists and Alexandrines which preceded it. Although Philo was a Hebrew, and probably knew nothing of Christ, he attained by means of Hellenism to the idea of the Man-God; the Platonic Word, which was merely the projection of God into human reason, was accepted

for the same reason as the Christian dogma of the Word made man.

"Let us see what new principles, what higher morality and civilization were added by the diffusion of Christianity to those principles which were the spontaneous product of the race. We must first consider what part the pagan gods, as they were regarded by educated men, played in the history of the European race, with respect to the individual and to the commonwealth. The pagan Olympus, considered as a whole, and without reference to the various forms which it assumed in different peoples, was not essentially distinct from human society. Although the gods formed a higher order of immortal beings, they were mixed up with men in a thousand ways in practical life, and conformed to the ways of humanity; they were constantly occupied in doing good or ill to mortals; they were warmly interested in the disputes of men, taking part in the conflicts of persons, cities, and peoples; special divinities watched over men from the cradle to the grave, and they were loved or hated by the gods by reason of their family and race. In short, the heavenly and earthly communities were so intermixed that the gods were only superior and immortal men.

"The people were accustomed to consider their deities as ever present, distinct from, and yet inseparably joined with them; so that the individual, the country, the tribes, were ever governed, guarded,

favoured, or opposed by special and peculiar gods. Olympus had a history, since the acts of the gods took place in time and were coincident with the history of nations, so that every event in heaven corresponded with one on earth; the idea of divine justice was exemplified in that of men, and both were perfected together. Among pagans of the Aryan race there was a perpetual and repeated alliance between men and gods made in the image of man. This action of the gods both for good and evil became in its turn the rule of life for the ignorant multitude, and they acted in conformity with the supposed will and actions of the gods; the divine will was, however, nothing but an *a priori* religious conception of an idol representing the forces of nature or some moral or religious idea. The moral perfection of nations, as time went on, also perfected the supreme justice of Olympus, and the moral worth of the gods increased as men became better. So that it was not the original theological idea, but man himself, who made heaven more perfect, and the gods morally better and more just.

"The explicit power of mental reasoning and of science was added to this spontaneous evolution of the religious idea, so far as the improved morality of the race perfected the heavenly justice which was its own creation. The pagan Olympus was gradually simplified by sages and philosophers; the illicit passions of the gods were set aside, and it was transformed into a providential government of individuals and of society,

much more remote from direct contact with men. The conception of the immortal gods included one supreme power, formative, protecting or avenging, and this conception bordered on the Semitic idea of the absolute Being, although without quite attaining to it. God was confounded with the order of things, his laws were those of the universe, by which he was also bound, and the righteous man lived in conformity with these laws. When Christianity began, pagan rationalism had arrived at the idea of a spiritual and directing power, organically identical with the universe. It was neither the Olympus of the common people, nor the Semitic Jehovah, but rather the conscious and inevitable order of nature. Although, either as an Olympus or as a dogma, the deity was confounded with men or constrained them to follow a more rational rule of life, yet paganism clearly distinguished the gods from men in their concrete personality, and the action of humanity was therefore distinct from that of the deity.

"When Christianity began, the peoples of the Aryan race in Europe, or at least those of more advanced civilization, had constituted for themselves a heavenly Pantheon, which contained nearly all the primitive deities, but in a more human form and exercising a juster rule over the world, while at the same time they were regarded as quite distinct from the society of men. Although there was in this multiplicity of divine forms an hierarchical order of

different ranks, there was no general conception to include the destinies of the whole human race, and to manifest by its unity its providential and historical development. Each people believed in their own special destiny, which should either raise them to greater glory and power or bring them to a speedy and inevitable end; but there was no common fate, no common prosperity nor disaster. Rome had, as far as possible, united these various peoples by the idea of her power, by the inforcement of her laws, and by the benefits of her citizenship, yet the Roman unity was external, and did not spring from the intimate sense of a common lineage. While the nations were so closely united to Rome by brute force, the subject peoples were agitated by a desire for their ancient independence and self-government. Some of these pagan multitudes advanced in civilization through their education in the learning of the Romans, and in morality through their spontaneous activity, but they did not possess any deep sense of a general providence, and heaven and earth continued to be under the sway of an incomprehensible fate.

"If we now turn to consider the mental conditions of educated men at that time, we shall see that they transformed the Olympus of personal and concrete gods into symbols of the forces of nature, and that they had risen to a purer conception of the deity by making it agree with the progress of reason; but this deity was so remote from earth as to have scarcely

anything to do with the government of the world. According to the teaching of the Stoics, which was very generally diffused, man was supposed to be so far left to himself that he was the creator of his own virtue, and had to struggle, not only against nature and his fellow-man, but against fate, the underlying essence of every cosmic form and motion. If this pagan rationalism gave rise to great theoretic morality, and produced amazing examples of private and public virtue, it had little effect on the multitudes, nor did it contain any guiding principle for the historical life of humanity as a whole.

"Christianity proclaimed the spiritual unity of God, the unity of the race, the brotherhood of all peoples, the redemption of the world, and consequently a providential influence on mankind. Christianity taught that God himself was made man, and lived among men. Such teaching was offered to the people as a truth of consciousness rather than of dogma, although it was afterwards preserved in a theological form by the preaching of Paul, and the pagan mind was more affected by sentiment than by reason. The unity of God was associated in their æsthetic imagination with the earlier conception of the supreme Zeus, which now took a more Semitic form, and Olympus was gloriously transformed into a company of elect Christians and holy fathers of the new faith. A confused sentiment as to the mystic union of peoples, who became brothers in

Christ, had a powerful effect on the imagination and the heart, since they had already learned to regard the world as the creation of one eternal Being. In the ardour of proselytism and of the diffusion of the new creed, they hailed the historical transformation of the earthly endeavour after temporal acquisitions and pleasures into a providential preparation for the heavenly kingdom.

"In Christ, the incarnation of the supreme God, they beheld the apotheosis of man, so acceptable to the Aryan race, since he thus became the absolute ruler of the world and its fates. Ideas and sentiments, of which the Semitic mind was incapable, and which were opposed to their historical and intellectual development, moved and satisfied the Aryan mind, and became associated as far as possible with the dogma and belief to which the race had attained in their pagan civilization. Thus heaven, dogma, and Christian rites assumed from the first a pagan form; and while the original idols were repudiated in the zeal for new principles, their common likeness was maintained by the imaginative power of the race.

"In this way Christianity became popular, and the Semitic idea was invested with pagan forms, in order to carry on the gradual and more intimate spiritual transformation which is not yet terminated. Its teaching was at first decidedly rejected and opposed by cultivated minds, accustomed as the Greeks

were with few exceptions to use their reason. Among philosophers, the popular belief in a personal Olympus had disappeared, and a more rational study of mankind did not allow them to understand or comprehend a dogma which re-established anthropomorphism under another aspect, so that this new and impious superstition became the object of persecution. These were, however, mere exceptions, an anticipation of the opposition of reason to mythical ideas, which became more vigorous in every successive age, until the time arrived when reason, educated by a long course of exercise, was able to renew the effort with greater authority and success. The common people gradually became Christian, and so also did educated men, who thus added the authority of the schools to a teaching accepted by the feelings and innate inclination of the race, and hence followed the theological development of Christian dogma.

"These new principles and beliefs, eventually accepted by all the nations of Europe, both barbarous and civilized, not only brought to perfection the religious intuition characteristic of the morality and civilization of the race, but they produced a new and renovating power in historical and social life. This fresh virtue consisted in the belief in a power consubstantially divine and human. Although the pagan gods were human in their extrinsic and intrinsic form, only differing from mortals by their mighty privileges, yet they were personally distinct

from men, and while the acts of Olympus mingled with those of earth, they had an habitation and destinies apart. But by the new dogma, the one God who was a Spirit took on him the substance of man and was united with humanity as a whole, according to the Pauline interpretation, which was generally accepted by our race. The divine nature was continually imparted to man, the body and members in which the divine spirit was incarnated, since the Church or mystical community of Christians was the temple of God. Through this lively sense of the divine incarnation, the Christian avatar with which the race had been acquainted under other forms, God was no longer essentially distinguished from mankind in the form of a number of concrete beings, but was spiritually infused into men and acted through them. The Christian as man felt himself to be a participator with God himself by a mystic intercourse. Since, therefore, the human faculty was historically identical with the divine, and shared in the spiritual work which was to effect the redemption of society, this new and Christian civilization added daring, confidence, and virtue to the natural energy of the race.

"Not many years elapsed before men ceased to contemplate the immediate end of the world predicted by the first apostles and the Apocalypse; they looked forward to a more distant future, and except in the case of some particular sects, they applied the prophecies which referred to the first generation of

Christians to the future history of the race. It was therefore Christianity which introduced into the consciousness of our Aryan peoples the principles of a divine historic power acting on the social economy of mankind, and in this way the natural dignity and enterprising pride of the race was increased. Through this fresh religious intuition and spiritual exaltation, the purity and moral sweetness of the Semitic Nazarene became the law of society, and the church organization gradually assimilated everything to itself, and received divine worship in the person of the supreme Pontiff, who continued for many ages to be the temporal ruler of consciences, of public institutions, and of civilization. Strange daring in a race which from its early beginnings down to our own days has been always true to its own character, and in one form or other has displayed vigour, energy, ambition, transforming power, and great designs.

"This remarkable process could only go on in and through those peoples whose vigour and pride equalled their physical strength; to whom it is death to sit still, and life to be always busy, to transform all things to their own image, to dominate over all—over God by the intellect, over the world by science, over other races by force of arms. After the anthropomorphic form was given to natural phenomena, which is done to some extent by all races, the gods were made in the image of man; full of æsthetic imagination, of grand and vigorous conceptions, they

modified and transformed the truth of the Semitic idea, to suit their own genius and imagination, and in this way they produced the wonderful fabric of Christian civilization and of Catholicism. They alone accepted a teaching which infused new spirit into social life and produced the rule of religion over the world, and the race still stands alone in the maintenance of its beliefs, to which science has added the powerful simplicity of the Semitic idea, and their vigorous influence has perpetuated and perfected human progress upon earth.* The Aryan race attained to the Semitic conception in its purity and cosmic reality by the process of reason, and only because it was endowed with all the civilizing and moral qualities which were acquired in so many ages of moral and intellectual energy, has the old conception been so vigorous and productive.

"The Semitic race, on the other hand, adhered to their old faith, rejected Christianity, as it had been formulated by the Aryans, and had little influence on the world. The Israelites, indeed, dispersed among other nations, retained the idea of the one spiritual God in all its purity, and civilization would have

* The illustrious Du Bois Reymond delivered a lecture a few years ago, in which he made it clear that the Semitic idea of one Almighty God led to the later and modern conception of the unity of forces and the rational interpretation of the system of the universe. This important testimony of so able a man confirms the theory set forth some years ago in the work of which I have reproduced a part in the text.

been much indebted to them for this rational idea of God if they had more clearly understood its scientific bearing and the nature of man; many of them are indeed justly entitled to fame in every department of science. But taken by themselves and as a people, they had little effect on civilization, since they lacked the energy of purpose, courage, mental superiority, and imagination, which create a durable and powerful civilization.

"The Arabs, aroused for a time by Mahometan fanaticism, overran great part of Europe, Asia, and Africa, but without influencing civilization. While in possession of a great and productive idea, they remained a sterile and nomad people, or founded unproductive dynasties. For the Semitic race, the interval between God and man, and consequently between God and civilization, was and is infinite, impassable. The Arabs possessed nothing but the devastating force of proselytism to fertilize their minds and social relations; and, with the exception of architecture, geography, and cognate sciences, they were for the most part only the transmitters of the science of others. We, on the contrary, filled up the gulf by placing the Man-God between God and man, and civilization has a power and vigour which has never flagged, and which, now that dogma is transformed into reason, will not flag while the world lasts." *

* Some Jewish Christians of the Semitic race took refuge in a district of Syria, and retained their primitive faith without further

This extract from a work published many years ago, seems to me to confirm the theory of myths which I have explained; it shows how they are ultimately fused into a simple form, in conformity with the ideas of civilized society, and it will also throw light on what is to follow.

If we consider the primitive genesis and evolution of myth, confirmed by all the facts of history and ethnography, it will appear that although the matter on which thought was exercised was mythical and fanciful, the form and organizing method were the same as those of science. It is, in fact, a scientific process to observe, spontaneously at first, and then deliberately, the points of likeness and unlikeness between special objects of perception; we must rise from the particular to the general, from the individual to the species, thus ever enlarging the circle of observation, in order to arrive at types, laws, and ultimate unity, or at least a unity supposed to be ultimate, to which everything is reduced. So that the mythical faculty of thought was scientific in its logical form, and was exercised in the same way as the scientific faculty.

But science does not merely consist in the sys-

development, under the name of Nazarenes or Ebionites. In the fourth century, Epiphanius and Jerome found these primitive Christians constant to the old dogma, while Aryan Christianity had made gigantic strides, both in its ideas and social organization. Among the Semites, even when they have partially accepted the dogma, it was and is unproductive.

tematic arrangement of facts in which it begins, nor in their combination into general and comprehensive laws; the sequence of causes and effects must also be understood, and it is not enough to classify the fact without explaining its genesis and cause. We have seen that the innate faculty of perception involved the idea of a cause in the supposition that the phenomenon was actuated by a subject, and while thought classified fetishes and idols in a mythical way, an inherent power for good or evil was ascribed to them, not only in their relation to man, but in their effects on nature. What Vico has called "the poetry of physics" consisted in the explanation of natural phenomena by the efficacy of mythical and supernatural agents. From this point of view again, myth and science pursue identically the same method and the same general form of cognition.

Nor is this all. Science is, in fact, the *de-personification* of myth, arriving at a rational idea of that which was orignally a fantastic type by divesting it of its wrappings and symbols. In the natural evolution of myth, man passes from the extrinsic mythical substance to the intrinsic ideal by the same intellectual process, and when the types have become ideas, he carries on intrinsically the *entifying* process which he first applied to the material and external phenomena.

In this case also the process is gradual; by attempting a more rational explanation of physical

phenomena, man attains to ultimate conceptions which express direct cosmic laws, and he regards these laws as substantial entities, which in their originally polytheistic form were the gods who directed all things. Here the scientific myth really begins, since natural forces and phenomena are no longer personified in anthropomorphic beings; but the laws or general principles of physics are transformed into material subjects, which are still analogous to human consciousness and tendencies, although the idolatrous anthropomorphism has disappeared.

The combination of myth and science in the human mind does not stop here, since, as I have said, it goes on to form ideal representations. When thought penetrates more deeply into the physical laws of the universe, and is also more rationally engaged in the psychical examination of man's own nature, ideas are classified in more general types, as in the primitive construction of fetishes, anthropomorphic idols, and physical principles; and in this way an explicit and purely ideal system is formed, in which the images correspond with the fanciful and physical types which were previously created.

It usually happens that thought, by the innate faculty of which we have so often spoken, regards the ideas produced by this complex mental labour as material entities endowed with eternal and independent existence; and this produced the Platonic teaching, the schools in Greece and Italy, and other

brilliant illustrations of this phase of thought. Such teaching, the result of explicit reflection, is a rival of the critical science which followed from it. It is always active, while constantly varying and assuming fresh forms; and it not only flourishes in our time in the religions in which it finds a suitable soil, but also, as we shall see, in science itself.

In addition to this complex evolution of myth as a whole, special myths follow similar laws; since they are generated from the same facts, and pass through the same phases, they culminate in a partial ideality, and this involves a simple and comprehensive law of the phenomena in question, and even a moral or providential order. For example, we may trace the Promethean myth to the end of the Hellenic era, and the different phases and final extinction of this particular myth are quite apparent.

The origin of the myth, which was directly connected with the perception of the natural phenomena of light and heat, was due to the same causes as all others, but we will consider it in its Vedic phase, as it may be gathered from tradition, and from the discoveries of comparative philology, and we have a sure guide in this research in the great linguist Kuhn, whose remarks have been enlarged and illustrated by Baudry.

The Sanscrit word for the act of producing fire by friction is *manthâmi*, to rub or agitate, and this appears from its derivative *mandala*, a circle; that is,

circular friction. The pieces of wood used for the production of fire were called *pramantha*, that which revolves, and *arani* was the disc on which the friction was made. In this phase, the fetishes are, according to our theory, in the second stage. The Greeks and Romans, and indeed almost all other peoples, knew no other way of kindling a fire, and in the sacred rites of the Peruvians the task was assigned to the Incas at the annual festival of fire. The wood of the oak was used in Germany, on account of the red colour of its bark, which led to the supposition that the god of fire was concealed in it. Tan is called *lohe*, or flame, in Germany. This primitive mode of kindling a fire was known to the Aryans before their dispersion, and friction with this object was equivalent to the birth of the fire-god, constraining him to come down to earth from the air, from thunder, etc.; indeed fire was also called *düta*, the messenger between heaven and earth. The question arose who had drawn fire from heaven, and developed it in the *arani*. A resemblance was also traced between the instruments for kindling fire and the organs of generation, a reciprocal interchange of various myths, as we have before observed. *Agni* is concealed in *arani*, like the embryo in the womb (Rig-Veda). Thus *pramantha* is the masculine instrument, *arani* the feminine, and the act of uniting them is copulation.

Agni had disappeared from earth and was concealed in a cavern, whence it was drawn by a divine person;

that is, fire had disappeared and was concealed within the *arani*, whence it was extracted by the *pramantha* and bestowed upon man. *Mâtariçvan*, the divine deliverer, is therefore only the personification of the male organ.

In virtue of the idea that the soul is a spark, and that the production of fire resembles generation, *Bhrigu*, lightning, is a creator. The son of *Bhrigu* marries the daughter of *Manu*, and they have a son who at his birth breaks his mother's thigh, and therefore takes the name of *Aurva* (from *uru*, a thigh). This is only the lightning which rends the clouds asunder.

Many Græco-Latin myths, beginning with that of Prometheus, must be referred to *Mâtariçvan* and to the *Bhrigu*, and we can trace in the name of Prometheus the equivalent of a Sanscrit form *prâmathyus*, one who obtains fire by friction. Prometheus is, in fact, the ravisher of celestial fire (a phase of the polytheistic myth in a perfectly human form); he is a divine *pramantha*. It is Prometheus who in one version of the myth cleaves open the head of Zeus, and causes Athene, the goddess who uses the lightning as her spear, to issue from it. The Greeks afterwards carried on the evolution of myth in its transition from the physical to the moral phenomenon, and, forgetful of his origin, they made Prometheus into a seer. As *Bhrigu*, he created man of earth and water, and breathed into him the spark of life. Villemarqué tells us that in Celtic antiquity there was an analogous

myth, as we might naturally expect, since the Celts belong to the Aryan stock; Gwenn-Aran (albus superus) was a supernatural being which issued like lightning from a cloud.

The more thoughtful Greeks did not limit the Promethean myth to the idol and to anthropomorphic fancies, but it passed into a moral conception, and we have a proof of this transition in Æschylus.

In fact, as Silvestro Centofonti observes in a lecture on the characteristics of Greek literature, the grand figure of the Æschylean Prometheus is a poetic personification of Thought, and of its mysterious fates in the sphere of life as a whole. First, in its eternal existence, as a primitive and organic force in the system of the world; then in the order of human things, fettered by the bonds of civilization, and subject to the necessities, lusts, and evils which constantly, arise from the union of soul and matter in unsatisfied mortals. Thought is itself the source of tormenting cares in this earthly slavery, yet the sense of power makes it invincible, firm in its purpose to endure all sufferings, to be superior to all events; assured of future freedom, and always on the way to achieve it by reverting to the grandeur of its innate perfection; finally attaining to this happy state, by shaking off all the enslaving bonds and anxious cares of the kingdom of Zeus, and by obtaining a perfect life through the inspirations of wisdom, when the revolutions of the heavens should fill the earth with divine power, and

restore the happiness of primeval times. It is evident that in this stupendous tragedy Æschylus is leading us to the truth in a threefold sense: æsthetic, morally political, and cosmic. The supreme idea which sums up the whole value of the composition is perhaps that of an inevitable reciprocity of action and reaction between mind and effective force, between the primitive providence of nature and the subsequent laws of art, both in the civilization of mankind and in the order and life of the universe.

In this way the evolution of the special myth was transformed into poetry by the interweaving, collection, and fusion with other myths, and in the minds of a higher order it was resolved into an allegory or symbol of the forces of nature, into providential laws or a moral conception.

This law of progressive transformation also occurs in the successive modifications of the special meaning of words, so far as they indicate not only the thing itself, but the image which gave rise to the primitive roots. For a long while, those who heard the word were not only conscious of the object which it represented, but of its image, which thus became a source of æsthetic enjoyment to them. As time went on, this image was no longer reproduced, and the bare indication remained, until the word gradually lost all material representation, and became an algebraical sign, which merely recalled the object in question to the mind.

When, for example, we now use the word (*coltello*), *coulter*, the instrument indicated by this phonetic sign immediately recurs to the mind and nothing else; the intelligence would see no impropriety in the use of some other sign if it were generally intelligible. But in the times of primitive speech, the inventors of this rude instrument were conscious of the material image which gave rise to it, and they were likewise conscious of all the cognate images which diverged from the same root, and in this way a brief but vivid drama was presented to the imagination.

If we examine this word with Pictet and others, we shall find that the name of the plough comes from the Sanscrit *krt*, *krnt*, *kart*, to cleave or divide. Hence *krntatra*, a plough or dividing instrument. The root *krt* subsequently became *kut* or *kutt*, to which we must refer *kûta*, *kûtaka*, the body of the plough. This root *krt*, *kart*, is found in many European languages in the general sense of cutting or breaking, as in the old Slav word *kratiti*, to cut off. It is also applied to labour and its instruments: *kartóti*, to plough over again, *karta*, a line or furrow, and in the Vedic Sanscrit, *karta*, a ditch or hole. Hence the Latin *culter*, a saw, *cultellus*, a coulter, and the Sanscrit *kartari*, a coulter. The Slav words for the mole which burrows in the earth are connected with the root *krt*, or the Slav *krat*. In very remote times, men not only understood the object indicated in the word for a coulter, but they

were sensible of the image of the primitive *krt* and its affixes, which were likewise derived from the primitive images, and with these they included the cognate images of the several derivatives from the root. In these days the word coulter and the Sanscrit *kartari* are simply signs or phonetic notations, insignificant in themselves, and everything else has disappeared. But in primitive times an image animated the word, which by the necessary faculty of perception so often described was transformed into a kind of subject which effected the action indicated by the root. As this personality gradually faded away, the actual representation of the image was lost, and even its remote echo finally vanished, while the phonetic notation remained, devoid of life and memory, and without the recurrence of cognate images which strengthened the original idea by association. All words undergo the like evolution, and this may be called the mythical evolution of speech.

Thus the Sanscrit word for daughter is *duhitar;* in Persian it is *dôchtar,* in Greek *θυγάτηρ,* in Gothic *dauhtar,* in German *Tochter.* The word is derived from the root *duh,* to milk, since this was the girl's business in a pastoral family. The sign still remains, but it has lost its meaning, since the image and the drama have vanished. This analysis applies to all languages, and it may also be traced in the words for numbers. The number *five,* for example, among the Aryans and in many other tongues, signifies

hand. This is the case in Thibet, in Siam, and cognate languages, in the Indian Archipelago and in the whole of Oceania, in Africa, and in many of the American peoples and tribes, where it is the origin of the decimal system. In Homer we find the verb πεμπάζειν, to count in fives, and then for counting in general; in Lapland *lokket*, and in Finland *lukea*, to count, is derived from *lokke*, ten; and the Bambarese *adang*, to count, is the origin of *tank*, ten.

When the numerical idea of five was first grasped, the conception was altogether material, and was expressed by the image of the five-fingered hand. In the mind of the earliest rude calculators, the number five was presented to them as a material hand, and the word involved a real image, of which they became conscious in uttering it. The number and the hand were consequently fused together in their respective images, and signified something actually combined together, which effected in a material form the genesis of this numerical representation. But the material entity gradually disappeared, the image faded and was divested of its personality, and only the phonetic notation five remained, which no longer recalls a hand, the origin of the several numerals, nor words connected with it. It is now a mere sign, apart from any rational idea. The same may be said of the other numerals.

We give these few examples, which apply to all words, since they all follow the same course,

beginning with the real and primitive image, subjectively effecting their peculiar meaning. Hence we see how the intrinsic law of myth is evolved in every human act in diverse ways, but always with the same results.

In fact, before articulate speech, for which man was adapted by his organs and physiological conditions, was formulated into words for things and words for shape, man like animals thought in images; he associated and dissociated, he composed and decomposed, he moved and removed images, which sufficed for all individual and immediate operations of his mind. The relations of things were felt, or rather seen through his inward representation of them as in a picture, expressing in a material form the respective positions of figures and objects which, since they are remote from him, can only be expressed by such words as *nearer*, *lower* or *higher*, *faint* or *clear*, by more vivid or paler tints, such as we see in a running stream, in the forms of clouds, in the reciprocal relations of all objects represented in painting.

In order to understand the primeval process of thought by means of images, it is necessary to conceive such a picture as living and mobile, and constantly forming a fresh combination of parts. Animals have not, and primeval man had not, the phonetic signs or words which give an individual character to the images, and so represent them that by combining these images in an articulate form, thought

may be represented by signs; and in and through these a universal and objective mode of exercising the intellectual faculty of reasoning has been created.

Speech can, by means of reflex memory, produce at will the particular images already classified in the mind, and this makes the process of reasoning possible; since such a process becomes more easy by the use of signs to which the attention can revert. The relative size of objects, and the like qualities, which are at first regarded as so many different intuitions in space, are defined by words or gestures, and are thus subjected to comparative analogy; but in the early stages of language these relations were presented in an extrinsic form by phonetic signs, and became images which in some sort represented one particular state of consciousness with respect to the two things compared. Galton, speaking of the Damaras, tells us that they find great difficulty in counting more than five, since they have not another hand with which to grasp the fingers which represent the units. When they lose any of their cattle, they do not discover the loss by the diminution of the number, but by missing a familiar object. If two packets of tobacco are given to them as the regulation price of a sheep, they will be altogether at a loss to understand the receipt of four packets in exchange for two sheep. Such examples might be multiplied to any extent.

We repeat that when not endowed with speech, or

some analogous means, animals and man think in images, and the relations between these images are observed in the simultaneousness and succession of their real differences; these images are combined, associated, and compared by the development of reflex power, and hence arises the estimate of their concrete relations. Of this we have another proof, observed by Romanes in a lecture on the intelligence of animals, and confirmed by myself, in the condition of deaf-mutes before they are educated, in whose case the extrinsic sign and figure takes the place of the phonetic and articulate sign. Where speech is wanting, it is still possible to follow a conscious and imaginative process of reasoning, but not to rise to the higher abstract ideas which may be generated by such reasoning. The thought of deaf-mutes always assumes the most concrete form, and one who was educated late in life informed Romanes that he had always before thought in images. I know no instance of a deaf-mute who has independently attained to an advanced intellectual stage, or who has been able without education to form any conception of a supernatural world. R. S. Smith asserts that one of his deaf-mute pupils believed, before his education, that the Bible had been printed in the heavens by a printing press of enormous power; and Graham Bell speaks of a deaf-mute who supposed that people went to church to do honour to the clergyman. In short, the intellectual condition of uneducated deaf-mutes is on a level with

that of animals, as far as the possibility of forming abstract ideas is concerned, and they think in images.

There is a well-known instance in the deplorable condition of Laura Bridgman, who from the time she was two years old, was deaf and dumb, blind, and even without the sense of taste, so that the sense of touch was all that remained. By persevering and tender instruction, she attained to an intellectual condition which was relatively high. A careful study of her case showed that she had been altogether without intuitive knowledge of causes, of the absolute, and of God. Howe doubts whether she had any idea of space and time, but this was not absolutely proved, since as far as distance was concerned, she seemed to estimate it by muscular sensation. Everything showed that she thought in images. Although without any sensation of light or sound, she made certain noises in her throat to indicate different people when she was conscious of their presence or when she thought of them, so that she was naturally impelled to express every thought or sensation, not externally perceived, by a sign; and this shows the tendency of every idea and image towards an extrinsic form. She often conversed with herself, generally making signs with one hand and replying with the other. It was evident that a muscular sign or the motion of the fingers was substituted for the phonetic signs of speech, and in this way ideas and images received their necessarily extrinsic form. The image was em-

bodied in a muscular act and motion, and in this way thought had its concrete representation. The same results would, as far as we know, be obtained from others in the same unhappy conditions as Laura Bridgman.

It is therefore clear that primitive language was only a vocal and individual sign of material images, and it was for a long while restricted to these concrete limits. Since the vocal signs of the relations of things are less easily expressed, these relations were at first set forth by gestures, by a movement of the whole person, and especially of the hands and face. This preliminary action is helped by the imitative faculty with which children and uncultured peoples are more especially endowed, of which we have also instances in the higher animals nearest to man. The negroes imitate the gestures, clothing, and customs of white men in the most extraordinary and grotesque manner, and so do the natives of New Zealand. The Kamschatkans have a great power of imitating other men and animals, and this is also the case with the inhabitants of Vancouver. Herndon was astonished by the mimic arts of the Brazilian Indians, and Wilkes made the same observation on the Patagonians. This faculty is still more apparent in the lower races. Many travellers have spoken of the extraordinary tendency to imitation among the Fuegians; and, according to Monat, the Andaman islanders are not less disposed to mimicry and imita-

tion. Mitchell states that the Australians possess the same power.

This fact also applies to the languages of extremely rude and savage peoples. Some American Indians, for instance, help out their sentences and make them intelligible by contortion of their features and other gesticulations, and the same observation was made by Schweinwurth of an African tribe. The language of the Bosjesmanns requires so many signs to make the meaning of their words intelligible that it cannot be understood in the dark. These facts partly explain the natural genesis of human languages.

We have learned from our earlier observations that phenomena appear to the perceptive faculty of primitive man as subjects endowed with power. The subjectivity of these phenomena, their intrinsic conditions and actions are fused into speech, which is their living and conscious symbol; and it is clear that the evolution of language from the concrete to the symbolical, and hence to the simple sign of the object, divested of its original power, is analogous to that of myth.

This law of evolution also applies to the art of writing, which is at first only the precise copy of the image; it is next transformed into an analogous symbol, and then into an alphabetical sign, which serves as the simple expression of the conception, divested of its originally representative faculty.

Hence it is apparent that the evolution of myth conforms to the general law of the evolution of human thought, of all its products and arts in their manifold ramifications. From the image, the informing subject, from the conception and the myth, the necessary cycle is accomplished in regular phases, wherever the ethnic temperament and capacity and extrinsic circumstances permit it, until the rational idea is reached, the sign or cipher which becomes the powerful instrument of the exercise and generalization of thought.

In order to show the efficacy of the mythical and scientific faculty of thought comprised in the systems of ancient and modern philosophy, and its slow progress towards positive and rational science, we will adduce an instance from the people in whom such an evolution was accomplished, aided by all the civilized peoples in reciprocal communication with them. Let us see how this faculty was manifested in the Greeks at a time when they first attempted to reduce the earlier and scanty knowledge of nature to a system.

In Greece the historical course of this faculty ramified into two classes of research, which were at that time objective, the Ionic and the Pythagorean schools. In the former, the phenomenon and nature were assumed to be the direct object of knowledge, while in the latter the object in view was the idea and harmony of things. Influenced by earlier and popular traditions, a mythical and philosophic system

arose in the Ionic school, which was exclusively devoted to physical speculations. In Lower Italy, on the contrary, and in colonies which were for the most part Doric, a science was constituted which, although it included physics and natural phenomena, did not only consider their material value, but sought to extract from their laws and harmony a criterion of good and evil. Ritter observes that the intimate connection between the Pythagorean philosophy and lyrical music—of which the origin was sought as a clue to explain the world—shows how far this philosophy was consonant with Doric thought. This historic process is quite natural, since the speculations of philosophy are first directed to physical phenomena, as they are displayed in inward and in external life, and then rise to the consideration of specific types, in a word, to the general and the universal.

Throughout this philosophical evolution the consideration is mainly from the objective point of view, and this is in conformity with the intellectual evolution of reason, since the mind is first occupied with the knowledge of things. In accordance with tradition and the logic of things, Ionic speculation was developed before the Doric. The Eleatic school followed from the two former, although its development was contemporary with the more perfect stage of these, and its influence upon them was to some extent reactionary.

Thales taught that everything was derived from one unique principle, namely water. The ancients believed that the land was separated from the water by a primitive and mythical process, a belief which had its source in the appearance of aqueous and meteorological phenomena; so that the teaching of Thales followed the earliest popular traditions, of which we find traces in the Indies, in Egypt, in the book of Genesis, and in many legends diffused through the world even in modern times. He said that everything was nourished by moisture, from which heat itself was derived, and that moisture was the seed of all things; that water is the origin of this moisture, and since all things are derived from it it is the primitive principle of the world. We see how much this theory is concerned with natural phenomena in their life, nutrition, and birth by means of seed. He regarded the world as a living being, which had been evolved from an imperfect germ of moisture. This mode of animating the world, which consists in tracing the development of a germ already in existence, reappears in other parts of his philosophy. He saw life in the appearance of death, and held the loadstone and yellow amber to be animate bodies, declaring generally that the world is alive, and filled with demons and genii.*

We trace the basis of these ideas in traditions prior to Thales, declaring the world to be a living

* Aristot., *De anima;* Cic., *De legibus;* Diog., Lae.

being, and that everything was derived from a primitive condition of germs. The same opinion was held by Hippo, by Diogenes of Apollonia, by Heraclitus, and by Anaxagoras. Aristotle states that the theory of development by germs was extremely ancient in his time. The other philosophers of the Ionic and successive schools mingled these fanciful ideas with the systematic arrangement of their theories as to the origin and constitution of the world, so that it is unnecessary to refer to them, since the method and conceptions are identical.

It is evident from this sketch that while thought gradually evolved a more rational system of general knowledge, the earlier idols and primitive mythical interpretations were not abandoned, although they assumed a larger and more scientific form. Thales and others assigned a mechanical origin to things, such as water, fire, or the like, which was contrary to anthropomorphic ideas; yet they still regarded the world as a living being, developed and perfected by the same laws and functions as all plants and animals, and they peopled it with genii and demons, thus handing on the earliest and rudest traditions of the race.

While the scientific faculty was gathering strength and leading the way to a more rational consideration of the world and natural phenomena, really advancing beyond the earlier ideas which had been almost wholly mythical, myth was still the matrix of

thought, although its envelopment was partly rent asunder and was becoming transparent. From this brief notice of the Ionic philosophy, sufficient for our purpose, let us return to the Pythagorean school, in which, although the faculty at work is essentially objective, there is a closer consideration of the analogies between thought and the world, and the ground is more often retraced, so that theory assumes a more intellectual form.

The Pythagoreans represented the origin of the world as the union of the two opposite principles of the illimitable and the limited, of the equal and the unequal. Yet they conceive this to be a primitive union, since they formulated the supreme principle as equal—unequal. (Arist. *Met.* xii. 7.) They held the infinite to be *the place of the one.* There was an attraction between the two principles, which was termed *the act of breathing;* hence the void entered into the world and separated things from each other. Thus their conception of the world was that of a concourse of opposite principles. They represented its limits as a unity and as the true beginning of multiplicity. They regarded the development of the world as a process of life regulated by the primitive principles contained in the world; its breath or life depended on the breaking forth of the infinite void in Uranus, and the time which is termed *the interval* of all nature penetrates at once and with the breath into the world. All therefore emanates from one,

and all is at the same time governed by one supreme power. Number is everything, and is the essence of things, but the *triad* includes all number, since it contains the beginning, middle, and end. Everything is derived from the primitive *one* and from the principal number; and since this number in breathing its vital evolution into the void is divided into many units, everything is derived from the multiplicity of these units or numbers.

Since, by his idea of the source of universal order, Pythagoras partly accepted the theocosmic monad as the final and necessary root of all life, and of all that is knowable, he could not fail to see the convertibility of the unit into the Being. But if the unit must always precede the manifold, there is a first unit from which all the others proceed; if this first and eternal unit is at the same time the absolute being, it follows that number and the world have a common origin and a common essence, and that the intrinsic causes and possible combinations of number are virtually accomplished in the development of the world, and these causes and combinations are ideal forms of this development. The monad is developed by these laws through all the generative processes of nature, while at the same time it remains eternal in the system of the universe; so that things not only have their origin and essence, their place and time according to numerical causes, but each is in effect a number as far as its individual properties and the

universal process of cosmic life are concerned. The reason of the number must depend upon the substance, by the configurations of which it is defined, divided, added, and multiplied, and to this geometry is added, which measures all things in relation to themselves and others. This eternal cause makes it intelligible that if immaterial principles precede and govern the whole material world, it is also by means of these that the classification of science is in intrinsic agreement with that of nature. Numbers have their value in music, in gymnastics, in medicine, in morals, in politics, in all branches of science. The Pythagorean arithmetic is the bond and universal logic of the knowable. But at the same time Pythagoras and his school peopled the world with demons and genii, which were the causes of disease; they did not abandon the old mythical ideas of the incarnation of spirits and the transmigration of souls—theories and beliefs which recur in nearly all primitive and savage peoples.

In this vast Pythagorean scheme, which contrasts with that of the Ionic school of physics, thought is more explicitly freed from the ruder mythical ideas, and rises to a more intelligent and rational conception of the world, but the ancient popular traditions still persist, and there is an evident *entification* of number. The primitive monad, numbers, their genesis and relations, are not regarded as abstract conceptions, necessary for understanding the order of nature, and a merely logical function of the mind; they are the

substantial essence which underlies all mythical representations. Although the essential life of the world is considered from a more abstract point of view, yet the mythical analogy of animal life evidently finds a place in the breath of the void and of time, assumed to be independent entities. The subsequent train of beliefs in spirits, of their incarnations and transmigrations, are closely connected with the phantasmagoria of the past, and display their mythical genesis; yet by their deeper and more explicit thought they may be said to infuse intellectual life into the world and into science which relates to it. In this first rational classification of science by the Greeks, both on its physical and its ideal side, thought sometimes issues in the simple contemplation of manifold nature, while it still continues mythical in its fundamental conceptions and spiritual corollaries; myth, however, instead of being altogether anthropomorphic, begins to become scientific.

I must here be allowed to quote a hymn in the Rig-Veda, which was historically earlier than the primitive philosophy of Greece, but which reveals the same tendency, the same mythical and scientific teaching in its interpretation of the world. In this hymn, which has been translated and explained by Max Müller, we see how boldly the problem of the origin of the world is stated (hymn 129, book x.)—

"Nor Aught nor Nought existed; yon bright sky
Was not, nor heaven's broad woof outstretched above.

What covered all? what sheltered? what concealed?
Was it the water's fathomless abyss?
There was not death—yet was there nought immortal,
There was no confine betwixt day and night;
The only One breathed breathless by itself,
Other than It there nothing since has been.
Darkness there was, and all at first was veiled
In gloom profound—an ocean without light—
The germ that still lay covered in the husk
Burst forth, one nature, from the fervent heat.
Then first came love upon it, the new spring
Of mind—yea, poets in their hearts discerned,
Pondering, this bond between created things
And uncreated. Comes this spark from earth,
Piercing and all-pervading, or from heaven?
Then seeds were sown, and mighty powers arose—
Nature below, and power and will above—
Who knows the secret? who proclaimed it here,
Whence, whence this manifold creation sprang?
The gods themselves came later into being—
Who knows from whence this great creation sprang?
He from whom all this great creation came,
Whether his will created or was mute,
The Most High Seer that is in highest heaven,
He knows it—or perchance even He knows not."

It is evident that in this hymn, the expression of the moment when human thought was partly freed from the earlier anthropomorphic ideas, the scientific faculty which attempts a rational explanation of the world is shown; and although this is an isolated inspiration of the prophet, yet it shadows forth the conclusions to which the primitive Hellenic speculation came when it was deliberately exerted to solve the problem of creation. In fact, there is here an intimation of the waters, of the void or deep abyss, as the beginnings of the world; of the breath of the One, the hidden germ

of things developed by means of heat; of productive powers as a lower, and energy as a higher form of nature; of conceptions found in the Ionic, the Pythagorean, and the Eleatic philosophies, which all converge into *the one*. All belong to the same Aryan race.

The Vedic composition represents in *Dyâvâprthivî* the close connection between the two divinities, Heaven and Earth, the one considered as the active and creative principle, the other as that which is passive and fertilized: the same ideas, more or less worked out, underlie not only the first philosophies, but successive theories and systems. The worship of water, of fire, and of air involved their personification, and they then became exciting principles, in accordance with the law of evolution which we have laid down. In the Rig-Veda, as well as in the Zendavesta, the waters are collectively invoked by their special name *âpas*, and they are termed the *mothers*, the *divine*, which contain the *amrta* or ambrosia, and all healing powers. In *Agni* and its Vedic transformations we clearly trace the worship of fire, and its cosmic value. The Vedic worship of the air is Vâyu, from *va*, to breathe, who is associated with the higher gods, and especially with *Indra*, ruler of the atmosphere: next comes *Rudra*, the god of storms, accompanied by the *Maruti*, the winds; and in the Zendavesta the air is invoked as an element. Hence we see that a more rational conception of the genesis of the world succeeds

to these earlier representations and personifications of the elements; representations which in another form endure throughout the course of human thought.

It is now necessary to consider the other period of the mythical and scientific evolution which had its definitive conclusion in Plato and Aristotle, teachers who even now to some extent influence the two great currents of speculative science. For us, however, it is more important to consider the Platonic teaching as that in which the mythical evolution of the earlier representations has full and clear expression; while in the Aristotelian philosophy an element of dissolution is already at work which throws some light on the illusions of the Platonic school.

We must bear in mind that the spontaneous and even the reflective intellectual faculty gradually assimilated special and independent myths into comprehensive types, which referred to all natural objects. Next, the incarnation of spirits produced the earliest forms of polytheism, and these were slowly classified into more concentric circles, and finally into a single hierarchical system. Owing to the attitude and ethnic temperament of the Greeks, the glorious anthropomorphism of their Olympus arose in a more vivid form than elsewhere, and it was impersonated in the all-powerful and all-seeing Zeus, ruler of the world, of gods and men. This process, modified in a thousand ways, was carried on in all races. Hence it resulted that every object had a type, its god;

everything was typically individuated in an anthropomorphic entity in such a way that there arose a natural dualism between the phenomena, facts, and cosmic orders on the one side, and on the other the hierarchy of gods who represented them and over whom they presided. The Hellenic philosophies prior to Plato, both physical and intellectual, and also the psychological morality of Socrates, had already accomplished the first evolution of this typical stage of universal polytheism, substituting for anthropomorphic representations physical and intellectual principles and powers. Thought was educated in its inward exercise, as well as in the observation of facts and ideal representations. But—and this constituted the first evolution of anthropomorphism in general—these powers all expressed the thing in its general and phenomenal form; it was endowed with merely zoomorphic force, and the world was regarded as physiologically living.

Plato, impelled by the foregoing evolution, and by the large and exquisitely æsthetic character of his genius, accomplished the second and altogether intellectual stage of evolution by inverting the problem; he affirmed that the final and intrinsic result of the exercise of thought was its earlier and eternal essence, extrinsic and objective. The types which were first fetishes and then polytheistic were transformed into the physical and intellectual principles of the world, divested of all mythical and extrinsic form as far as their material organization was concerned. Plato held

that such types were really ideal, as in fact they had unconsciously been from the first; that is, that it was simply a logical conception of species and genera which is natural to human thought; a conception necessary for the spontaneous as well as for the reflex and scientific processes of thought. From the type, the specific idea, the generalization into the idea of each special object was easy, since each object has its psychical representation in the mind. Special and specific ideas were then arranged in a certain order, and those which are more general in a concentric and systematic classification; this had been also the case in the earlier polytheistic system, since the process of the intelligence naturally arranges all its representations. But he did not stop here, nor indeed was it possible for him to do so.

We know that the intelligence does not only understand objects, but their relations to each other, by means of its comparative faculty; these relations were, as in the case of animals, at first intuitively perceived by direct observation and the alternate and reciprocal motion of the images, and they were first presented to the imagination and then embodied in speech. We have said in the foregoing chapters that in primitive thought these relations involved an active entity, and were in a word entified. Plato, pursuing his intellectual process of reasoning, and the reciprocal properties of ideas, noted the *ideality* of these relations so far as they are a psychical representation,

and hence he was constrained by the unconscious evolution of thought to affirm that an idea was present in every relation, and thus the great, the little, the less, the more, had their ideal representatives in the general construction of his theory. But man is not only an intellectual, but an active, sentient, living being, tending to an object as an individual and a social subject. So that he not only attains to the understanding of ideal truth, but also of the good and the beautiful. According to Plato, the Good and the Beautiful must also necessarily be Ideas of a general character, like those which embrace all ideal relations whatever. Since they are universal, and due to the innate impulse of thought towards concentric ascension, they must rank as the sum and apex of ideas, so that the Good is emphatically *the* Idea, or God. On turning to the world of sensations, or of particular objects, ideas are the eternal model (*paradigm*) according to which things are made ; these are the images (*idoli*) of which the others are the imperfect copies (*mimesi*). The world of sense is itself only a symbol, an allegory, a figure. As in the sensible world there is a scale of beings from the lowest to the most perfect, that is to the material universe, so in the sphere of intellect, the type of the world, ideas are combined together by higher ideas, and these again by others still higher, and so on to the apex, the ultimate, supreme, omnipotent Idea, the Good which includes and sums up the whole.

Plato holds that matter is not the body, but that which may become the body by the plastic action of the idea, as Weber well expresses it; matter considered in itself is the indefinite (*apeiron*), the indefinable (*aoriston*), and the amorphous, and it is co-eternal with ideas, and inert; from the union of ideas and matter the cosmos had its origin, the image of the invisible deity, God in power, the living organism (*Zoon*), possessing a body, sense, a definite object, a soul. The body of the universe has the form of a sphere, the most beautiful which can be conceived; the circle described in revolving is also the most perfect motion.

The stars first had their source in the Idea of Good; first the fixed stars, then the planets, then the earth, *created deities;* the earth produced organized beings, beginning with man, the crowning work and object of all the rest; the fruits of the earth were made to nourish him, and animals were made to become the abode of fallen souls. Man, the microcosm, is reason within a soul, which is in its turn contained in a body. The whole body is organized with a view to this reason. The head, the seat of reason, is round because this is the most perfect form. The breast is the seat of generous passions, while the bestial appetites are found in the belly and intestines.

The human soul, like the soul of the world, contains immortal and mortal elements; the intelligence or reason, and sensuality. The immortality of the

soul is also proved by the memory. The subsequent union of life and matter in the production of the universe is the work of an intermediate, equivocal being, the *demiurgos*. Thus Plato opposes the eternity of the intelligence to Ionic materialism, and the eternity of matter to the monistic theory of the Eleatics.

In the genesis of nature we again find the synthetic conception of the elements, which he estimates to be four; to which geometrical forms correspond, and the world was finally organized after its human type. He divides the soul into several distinct and independent powers, which are ever revolving between life and death: they inhabit the stars and depend upon them, since the soul which has been righteous on earth will be happy after death in the star to which it was originally destined; but those who on earth only desire here bodily pleasures will wander as shades round the tombs, or will migrate into the bodies of various animals. He constitutes the stars into contingent and sensible gods: they have beautiful and immortal bodies of a round form, and are made of fire. He asserts poetic inspiration and madness to be the result of demoniac possession, and says with Socrates that those who deny demoniac powers are themselves demoniacs.

We see from this account the mythical origin of all that concerns the organization and genesis of the world, the destinies and nature of the soul, since these

are sublimated myths; the elements are first regarded as deities, and the world is made in the image of man, and considered to be alive; the stars and the earth are endowed with life and intelligence; the fate of souls before and after death, their recollection of a prior existence, their transmigrations and wanderings around the tombs, demoniac possession in inspiration and madness, are all very ancient mythical representations, which form a great part of the theoretical and spiritual cosmogony of savages in all times and places. We have seen that not only relatively civilized peoples, but those which are quite savage divide souls into distinct parts: throughout Africa, America, and Asia, there is a belief in the transmigration of souls into animals, plants, and other objects. The Tasmanians believed that their souls would ascend to the stars and abide there; and all savages hold the demoniac possession of inspired persons, of madmen, and of the sick, which has led to what may be called a diabolic pathology. The general conception of the world as a living animal, with all the tendencies ascribed to it by Plato, is only the primeval fact of the animation and personification of phenomena applied to the general idea of the universe. Hence it is easy to see how much of Plato's physics and psychology are due to the necessary and historic course of myth, and to the schools into which myth had been modified before his time.

We must dwell more particularly on his theory of

ideas, since in this the advance made by Plato in the evolution of myth really consists, and it marks a very definite stage which had and still has a powerful influence on subsequent and modern thought.

We have already shown how, by the logical power of thought, this phase in the ideal evolution of myth was reached, and we have traced it in an inchoate form in various rude peoples, as well as in its ultimate modification in Plato. In his writings it takes the form of a complete, vast, and organic theory. The logical conceptions and representative ideas, idols peculiar to the mind, which were at first involved in fetishtic and anthropomorphic images, are now divested of their earlier wrappings, and are classified as the intellectual ideas which they really are, and which they have become by the innate and reflex exercise of human thought. But on account of the faculty which ever governs our immediate perception of internal and external things they could not in Plato's time, nor indeed in that of many subsequent philosophers, remain as simple intellectual signs of the process of reason. This faculty influenced these conceptions, these psychical forms, whether particular, specific, or general, and they became living subjects, like phenomena, objects, shades, images in dreams, normal and abnormal hallucinations. Thus the Ideas in Plato became, reflectively and theoretically, *entities* with an intrinsic existence, eternal, divine, and absolute essences. But the fetish, the anthropo-

morphic idol, was not only regarded as a living but as a causative subject; the same power was likewise infused into the Ideas, and they were held to be causes of particular things, of which they were the earlier and eternal type. Thus the myth in the Platonic Ideas became scientific, but it continued to be a myth; the substance varied, but the form was the same. The objective phenomena of the world had first been personified, or their fanciful images were assumed to be objective; now the world of reason was personified, and mythology became intellectual instead of cosmic.

Those who opposed Plato's theory of ideas said that he realized abstractions, or personified ideas; but no one, as I think, perceived the natural process which led him to do so, nor explained the faculty by which he was necessarily influenced. Plato's theory was only an ultimate phase of the evolution of the vague and primitive animation of the world, which had passed through fetishism, polytheism, and the worship of the elements of nature, and had reached the entification and subjectivity of ideas, which was also attained by natural science, after passing through its mythical envelopment. We have noted the causes, which in the case of the earlier philosophers happened to be objective, while they were in Plato's case subjective, owing to the character and temperament of his mind; both conduced to the development and æsthetic splendour of this teaching among the Greeks. The teaching of Plato, which had more or less influ-

ence on all the earlier civilized peoples, of his own and subsequent times, and which was also involved in the mythical representations of later savages, assumed an aspect which varied with the special history, the ethnic temperament, the geographical and extrinsic conditions of different peoples; but considered in itself, it is always the same, and is the necessary result of the evolution of myth and of thought. Since the evolution of myth leads to the gradual genesis of science, which becomes more rational as myth is transformed from the material to the ideal, ideas are substituted for myths, and laws, as Vico well observes, for the canons of poetry.

This noble and more rational theory of eternal and causative Ideas resembles anthropomorphic polytheism in concentrating into one supreme Idea the intellectual Zeus, the Being of beings, according to another mythical and scientific representation by Aristotle, and it was afterwards combined with the Semitic idea of the Absolute. This was fused with the Logos, the Platonic demiurgos of Messianic ideas, and afterwards produced the universal philosophy and religion of Catholicism, which dominated and still dominates over thought with vigorous tenacity, and extends into all the civilized world inhabited by European races. We do not only trace the same thought, modified, classified, and perfected in the Fourth Gospel, in the Councils, the Fathers, and the schoolmen, but also in independent philosophies. In

our own time it has assumed new forms, derived from the rapid progress made in cosmic and experimental sciences, even in those which are apparently the most rationalizing. It is manifest in Hegel, Fichte, and Schelling, nor is it difficult to trace it in the latest and artificial theories of the schools of Schopenhauer and Hartmann. In all these cases the entification of logical conceptions is evident; in all there is an arbitrary personification of a conception or of a fundamental Idea.

In order fully to understand the evolution of thought in myth and science, it is necessary to consider the other schools which arose in Greece, prior to, and contemporaneously with, Plato, as we shall thus obtain a more comprehensive idea of the course of such a development. In addition to the natural and partly ideal schools, the Ionic, the Eleatic, the Pythagorean and the Platonic, there arose those of Leucippus, Democritus, and Epicurus, which might be called mechanical, and that of Aristotle, which takes a middle course between the idea and the fact, between the dynamic and the mechanical explanation of the universe.

In an intellectual people like the Greeks there arose, in addition to the speculative theories already mentioned, other opinions which were derived from minds singularly free from mythical ideas; the world was considered as a concourse of independent atoms; its genesis thus became more conform-

able with abstract mathematical calculation, effected by this combination of simple bodies and the evolution of elements. This was what Leucippus, Democritus, and Epicurus undertook to teach, passing beyond the natural and ideal myths, in order to take their stand on the movement of isolated parts as the maker of the universe. Hence followed the theory of atoms, and the mechanical construction of the world, of bodies and souls, their continual composition and decomposition. Since, however, these were mere speculations, not supported by experimental methods and adequate instruments, mythical forms were confounded with the mechanical explanation of the world, such as the altogether anthropomorphic conception of gods who were dissolved and formed again; the sensible effluvium from images, an effluvium which revealed the ancient belief in the normal and abnormal personification of imaginary forms, and of ideas. Yet the character of this teaching was progressive and rational in comparison with the mythical and ideal theory of Plato, and with the schools and religions which emanated from him, even up to our time, and thought was strongly stimulated in its opposition to the continuance of myth.

The influence of this school was confirmed by the Aristotelian teaching; if on the one side Aristotle inclined towards the mythical entities of Plato, and the old zoomorphic conception of the world, on the

other his theory of perception and of ideas, his amazing observations in physiology and anatomy, and his natural classification of the animal kingdom, induced a positive tendency of thought, an *a posteriori* method of observation, which awakened the intelligence and predisposed it to a more rational and scientific evolution. His geocentric ideas of cosmogony, his logical forms, the human architecture of the world, his conception of the Being who was the end and cause of motion in all things, were indeed obstinately maintained by the philosophy of Catholics and schoolmen, and served as an obstacle to the real progress of science; but on the other hand, his general method of observing nature, the discoveries which he made, and the tendency of his researches, as well as the importance he assigned to consciousness in the formation of ideas, did much to foster independent inquiry in the history of human thought; and coupled with the earlier mechanical schools, he prepared the way for the evolution of modern science. This is not the place for tracing the simultaneous course of the evolution of the ideal and mechanical schools during the ages which separate us from their origin; and while the influence of the one gradually waned, the other gained strength, although in a sporadic way, first among privileged minds, and then more generally.

It necessarily happened that as the evolution of thought went on, impelled by its early tendencies,

both mechanical and positive, the ideal system was also modified, and gave place to sounder and truer theories. This great fact, the ultimate evolution of our own time, was effected on the one side by psychological analysis, and on the other by the direct and experimental observation of nature. Setting aside the gradual preparation which led up to this point, we can consider Descartes and Galileo as the representatives of these two great factors; since the one by the analysis of thought, the other by natural experiments, overthrew the mythical ideas, although without being aware that the achievement would produce such grand results.

The Platonic Ideas were objective to the mind, and independent of it, since they were regarded as a divine, concrete, absolute world in themselves. The earlier evolution of myth and science relied upon this and were resolved into it. But we know that the process of thought is continuous in historic races, and that myth is gradually divested of its personality and assumes a more intellectual form in the mind. Thus the material Idea passed into an intellectual conception; that which first appeared in an objective and extrinsic form became subjective and intrinsic, a transition which was effected by the nominalists. This gave rise to a cognition which was altogether psychological; at first reality was wholly objective, and the ideas were only a sublime intellectual myth, but now the objective world disappeared, and tho

intellect which formulated the conception was the only real thing. In virtue of the faculty of entification, only the mind and its ideas were real, the world and all which it contained had a doubtful existence. This tendency had its ultimate expression in Fichte, who created the universe by means of the *Ego*, thus transforming the earlier objective myth into one which was wonderfully subjective. Descartes doubted about everything beyond the range of his own thought, and was the first to overthrow the former ideal realism, and to lead the way to science, and to more rational analysis. To him the teaching of Spinoza and Kant was really due, as well as the English schools which had so much to do with the destruction of the earlier mythical edifice of ideas.

But, as I have already observed, if this great rational progress were important on the one side, on the other it produced a more spiritualized form of myth, namely the subjective, which became still more powerful in the philosophy of Kant. While some thinkers sought to resolve and dissolve the objective myth, they did it in such a way as to add strength to the subjective form of myth and science, for which Descartes had prepared the way; the theory of Spinoza and of the German school in general fundamentally consists in the substitution of entified forms and dialectics of the mind for the earlier objective forms of ideas. A great error was rectified, and the former phase of the intellectual evolution

of myth disappeared, in favour of another which, although still erroneous, was more rational and independent.

The subjective and still mythical representations, either of the mind or of external objects, were afterwards reduced to true science by positive and experimental methods, aided by instruments, and confirmed by the discoveries of Galileo and of his disciples throughout the civilized world. He was in modern times another great factor of the dissolution of myth, so far as it is definitive. Nature was made subordinate to weight and measure, and to their mathematical and mechanical proportions in various phenomena; these were deduced from experiment and the use of instruments, the factors which in the hands of Galileo and his great successors in all civilized nations, destroyed and are still destroying the old mythical conception of the world. In astronomy they overthrew the catholic tenet of the geocentric constitution of the heavens; they shattered the spheres in which they were confined, opened infinite space, and peopled it with an infinite number of stars, and in the attraction of gravity they discovered the universal law of motion in the firmament. Thus all the mythical representations of the system of the world, whether Aristotelian, Ptolemaic, or Biblical, vanished for ever, and the great zoomorphic body of the universe was dissolved; to be replaced by worlds circulating in infinite space, subject to the laws of number and of geometry.

Measure, weight, and proportion were applied to all celestial and terrestrial phenomena, and physics, chemistry, and all the organic sciences became the manifestation of facts, of observed and calculated laws, arranged in a natural order, and in this way an immense advance was made in all branches of science. The history of mankind, first regarded as the arbitrary arrangement of a superior being, as it was formulated in the teaching of Judaism and Christianity, had its own laws in the facts of which it consisted, and thus the mythical conception which endowed it with personal life was dissolved. The origin of things was explained by this method of observation, and by these positive conceptions; the records which had hitherto been regarded as a divine, extrinsic revelation came to be considered as simple documents, in which truth was to be separated from the myth which obscured and encompassed it. So by degrees, from fact to fact, from analysis to analysis, by observation, experiment, and decomposition, the rational, mechanical explanation arose and gathered strength. The generation of things, the variety of phenomena and their order, were derived from the primitive chemical atom, and from the various changes of form and rapidity of motion to which they are subjected. The old conception of atoms, which had never been forgotten, and which had unconsciously swayed and influenced the minds of men, reappears; but it reappears transformed by observation, by weight and measure and experi-

ment, and it has become a science instead of a simple speculation. The atomistic evolution of the ancients, accepted by one school of speculative thought, which sought to overthrow the mythical representation of the world, was only an isolated anticipation of a few philosophers; it has now become a scientific evolution, common to all modern civilization. The theory of descent, transformation, and the general evolution of species, followed as a necessary corollary and immediate result of the dissolution of Plato's mythical conception of specific ideas, and of all the generic but material personifications with which nature had been peopled. When such conceptions of the ideal world were dissipated, those of the actual world of nature soon followed, and this de-personification of natural, mythical species in the vast organic kingdom is one of the most splendid intellectual achievements of the age.

This victory of the natural sciences has reacted on those which are psychological, and on the theory of the mind, and has subjected them to the necessities and form of this new phase of the evolution of thought. The subjective had been substituted for the objective myth and had created the forms of mind, its logical laws and intrinsic process, the objective synthesis of the world, and it was now influenced by the stupendous discoveries and analyses of other sciences, so that psychology was in its turn transformed into a science, not only of observation, but of experiment. Measure,

weight, numerical proportion, in short the experimental method, took possession of the facts, acts, and processes of the mind, as of every other object and subject of nature. In addition to the great names of modern psychologists in England, we may mention among other experimental psychologists in Germany, Fechner, Wundt, Lotze, Helmholtz, Weber, Kammler, etc.; illustrious men in France and elsewhere might also be cited to show what progress has been made and is about to be made in this field. The destruction of myth and of the subjective myths of psychology is always going on, and a positive science of mental phenomena has arisen, like that of natural phenomena. The ultimate phase of myth is so near its end that it has been possible to create a psychology implying the absence of a soul. The scientific faculty has now indeed a complete ascendency over the mythical representation with which it was originally coeval.

Yet we do not mean to say that myth is extinct. In the case of the great majority of the human race, a small and elect portion excepted, myth and all the superstitions which proceed from it persist in an ideal, cosmic, spiritual, or religious form, and these are only slowly disappearing among the common people, and even among the educated classes. Owing to the primordial and innate necessity which it is so difficult to overcome, science itself still nourishes myths within its pale, although unconsciously and in their most

rational form. Within our own recollection *the imponderable* was a tenet of physics, and this was indeed, in spite of all the enlightenment of science, a mythical entification of forces. The same mythical entifications were found in physiology, in chemistry, in nearly all the sciences. Undoubtedly these scientific myths had no anthropomorphic value, yet they are notwithstanding truly mythical entifications, inasmuch as they virtually personify laws, or mere modes of motion.

Ether, according to our present conception of it, differing in its laws and influences from the atoms which constitute the world, and working among and above them, is perhaps only a grand myth like that of the imponderable, which has been exploded; that is, it is held to be a material entity, while it may be only another modification of the elementary matter in a state differing from the three already known to us; some of Crooke's late experiments on one condition of extremely gaseous matter leads to this assumption. The divided forces of matter, and the dualism which still survives, are also mythical conceptions. Although so much progress has been made in a rational direction, and truth is widely diffused, yet the old mythical instinct constantly reappears in some form or other. I must be permitted to say that this is an evident proof of the truth of my theory. Unless myth were due to an intrinsic psychical and organic law, it would

not so persistently reappear. As soon as men are rationally conscious of this entifying faculty and its immediate effects on knowledge, the illusion will cease. Myth will be destroyed in every kind of facts and phenomena, and science, no longer the unconscious victim of this illusion, will advance with caution and assurance.

CHAPTER VIII.

OF DREAMS, ILLUSIONS, NORMAL AND ABNORMAL HALLUCINATIONS, DELIRIUM, AND MADNESS—CONCLUSION.

In the preceding chapters, I have shown, as I believe, the genesis of myth, the fundamental faculty in which it necessarily originates, and its evolution in man, particularly in the Aryan and Semitic races. We have seen that the primitive and universal fact consists in the immediate and spontaneous entification of natural phenomena and of the ideas themselves; and we have resolved this fact into its elements, from which all the generating sources of myth issue, that is, from the immediate effects of the perception. Putting man out of the question, we ascertained that the same innate necessity was common to the animal kingdom.

In order to complete the theory, we must consider some other facts and psychical phenomena, both normal and abnormal, so as to ascertain whether these are not due to the same cause, as far as respects their intrinsic forms; namely, the belief in the reality

of images seen in dreams, as well as in those which appear in illusions, in normal hallucinations of the senses, and in those which are abnormal, in ecstasy, in delirium, in madness, in idiocy, and dementia. In all these mental conditions, we ascribe a body and material existence to images which for various causes appear to be really presented to our senses.

If we are able to show that all such appearances are believed to have a real existence in virtue of the same law and faculty of perception which generated myth in its earliest manifestation, we shall have succeeded in establishing a common genesis for all these various psychical phenomena, thus affording no contemptible contribution to psychology in general, and to the science of human thought.

To dream is not merely a normal act of man, but, as it appears from many witnesses, it is common to all animals. In dreams the ordinary laws of time and space are strangely modified, and images of all kinds appear, sometimes confusedly, sometimes in a rational order, often in accordance with the laws of association, while the voluntary exercise of thought may be said to be dormant. This is, speaking generally, the condition and nature of dreams, which we must presently consider adequately with more subtle and exact analysis.

Before we trace the cause of the apparent reality of these images, and the laws which govern it, let us consider man in his waking condition, so as to

ascertain at once the likeness and the difference between these two states. We must first inquire whether the waking is absolutely distinct from the dreaming state as far as the appearance of the images, their nature, and mode of action are concerned. It has been observed by many psychologists and physiologists that in the waking state, when images do not arise from the immediate presence of objects, or are not directed by the will to a definite aim, they appear, group themselves, and disperse by the immediate association of ideas, and the measurements of time and space are modified just as they are in dreams. These observations are correct, and the phenomena may be verified by every one for himself.

In this waking state, which really resembles that of dreams, only the analogy of form has been perceived; the ideas of the objects present to the mind have resembled those of images seen in dreams, but they have continued to be mere ideas, presented to the imagination, whereas in dreams the things seen have been supposed to have a real existence. In this respect the analysis is partly true and partly false; it is not, as we shall see, perfect and exact.

It sometimes happens, owing to special circumstances and conditions of mind, or to peculiar temperaments, that the ideas of things do not remain as mere *thoughts* in the thinker's mind, but that they become so intense that they are for the moment held to be real, precisely as in a dream.

I do not here speak of abnormal or pathological conditions, or of extraordinary phenomena, but of a normal and common condition. If there is any novelty in the assertion, it is owing to a want of observation and reflection, and to not attempting to trace the real nature of the phenomena in which we take part, and which occur every day. The habitual inaccuracy of observation has led to the use of many proverbs and aphorisms in the interpretation of things which have been transmitted from one generation to another, and are now accepted as indubitable axioms. These are to be found in every branch of knowledge, and we have an instance in the popular and scientific aphorism that in dreams images appear to be real, and that in the waking state they always continue to be mere thoughts and ideas.

This is not the fact, since, putting illusions and hallucinations out of the question, thoughts and ideas sometimes assume the character and nature of real objects, just as they do in dreams. This fact constitutes the link and gradual assimilation of the two states, since in no series of phenomena *natura facit saltum*.

When, for instance, as often happens, we abandon ourselves to a train of thought, and our perception of surrounding objects is weakened by inattention, we become as it were unconscious, and are only intent on the thoughts and ideas which move us. Since no definite object constrains the will to rule and guide

these thoughts and ideas, that condition of mind is established which we have shown to be identical in form with the act of dreaming, for in this case also thoughts and ideas have their origin in association alone. In this condition a phenomenon peculiar to dreams may also occur which may be termed the suggestive impulse; a sound or some sudden sensation produces an immediate transformation of the image itself, and a new dream arises in conformity with the nature of the new impression. Every one must, consciously or unconsciously, have experienced such a phenomenon, and this special characteristic of dreams may also take place in the waking condition which I have described. I myself can bear witness to this fact, and will mention one among several instances: I was once reading inattentively, seated at my ease in a lounging chair, and my thoughts took quite another direction, wandering vaguely from one thing to another. All at once some people entered an adjoining room talking together; I heard what they said indistinctly, but the word Florence reached my ears, and I soon imagined myself to be in that city, and going on from one association to another I continued for some time to see again the places, monuments, and people I had known there. Yet I was fully awake, and from time to time I brushed the flies from my face and glanced at the clock on the chimney-piece, since I had to go out at three o'clock.

It appears from this fact, which will be confirmed by many of my readers, that some waking states resemble those of dreams in form, and moreover they are sometimes even alike in substance. Ideas and thoughts in the conditions just indicated may not only be latent, active, combined, or transformed by suggestive impulses, but ideas are represented by images in such vivid relief that, until the observer recollects himself, they are seen and felt by him with the same sense of reality as in a dream. This mental transformation is however so habitual, that the implicit conviction of being really awake, does not allow us to observe what the actual nature of the phenomenon is, since there is an immediate transition from an implicit perception of the image as real to the habitual form of simple thought, without distinguishing the difference between these two states of consciousness. Any one who has long practised himself in the observation of such distinctions will, however, be able to understand the psychical process and to estimate its value.

It has often occurred to myself, in circumstances analogous to the above, when thinking of persons or places at a distance, to see them imaged before me in such vivid relief that I have been startled as if by a morbid hallucination. Once, in passing through my chamber, my attention was so strongly fixed on an absent person that I was not only vividly conscious of his form, but also of his voice and gestures, so that

I was amazed by the lively image brought before me. I could adduce other instances from my own experience and that of others to show that in a waking and altogether normal state we may believe in the reality of the image as we do in dreams.

This vivid and momentary realization of images is very common in the lower classes, who often talk to themselves, and use gestures which show that they are conversing at the moment with imaginary persons, who stand before them as if they were really there, in the same manner as in dreams. Indeed, every one has experienced this phenomenon for himself, especially when strongly excited by anger, sorrow, or hope. If it were possible to reflect on the process of thought at the time we should distinctly understand that we were dreaming while still awake.

The vivid imagination of artists is well known, so that they are able to see and represent things and persons, either in words, with the pencil, or the chisel, just as if they were actually present. The image so vividly realized is a necessary condition of the exercise of their respective arts. When great poets, such as Dante, Ariosto, Milton, and Goethe, conceived and idealized their thoughts with every detail of circumstances, persons, actions, expressions, and movements, no one can deny that the images were vividly present to their minds, and that while in the act of composition these were unconsciously regarded as having a real existence. If these poetic descrip-

tions are presented to the attentive reader in such a vivid form as to transport him into a real world, much more must the authors of these marvellous creations have looked upon them as real at the moment of composition. The impression of truthfulness is indeed produced by the fact that the writers saw these things as though they were real. I speak of states of consciousness, not of reflex observation, of intense moments of sensation and imagination, which are unnoticed by the man who experiences them in his waking moments. Such is the reader of a poem, a romance, or history, the spectator of a picture, who is able for the time to abstract himself from surrounding objects, and who implicitly believes that he sees those places and persons, or whatever the book or painter has described or represented. If suddenly interrupted, he rouses himself, and may be said to awake to the present reality of things, as if startled from a dream.

Wigan relates that a celebrated portrait painter worked with such quickness and facility that he painted more than three hundred portraits in a year. When he was asked the secret of his rapid execution and of the faithfulness of the likeness, he replied, "When any one proposes to have his portrait taken, I look at him attentively for half an hour, while sketching his features on the canvas; I then lay the canvas aside and pursue the same method with another portrait, and so on. When I wish to return to the

first, I take his person into my mind and place it before me as distinctly as if he were actually present. I set to work, looking at the sitter from time to time, since I am able to see him whenever I look that way." Talma asserted that when he was on the stage, he was able by mere force of will to transform his audience into skeletons, which affected him with such emotion as to add force and energy to his action. Abercromby speaks of a man who had the faculty of calling up visions with all the vividness of reality whenever he pleased, by strongly fixing his attention on mental conceptions which corresponded to them. Yet he was a sane man, in the prime of life, perfectly intelligent, and versed in practical affairs.

A very slight withdrawal of the attention from surrounding objects is all that is necessary to enable artists and some other persons to call up these images with vivid distinctness, since even in the waking state the image may for the moment appear to be actually before them. Any one might attain to the same power of vivification if the transition from the real to the merely ideal image were not in the waking state so instantaneous and easy; whereas in a dream the state of illusion is uninterrupted, and it is physiologically impossible for the mind to pass immediately from the image, which is believed to be real, to the simply representative idea of the thing.

Even in the waking state, the image and representative idea of the thing naturally tend to become,

or to appear to be, actual realities, even in a strictly normal condition of mind and body. Nor do they only implicitly tend to become such by the innate impulse of the mind, but they actually become so in fugitive moments of which man is scarcely conscious, and they appear to him exactly as they do in dreams. Hence it follows that there is no hard and fast line between the sleeping and waking states, so far as the nature of images, their source, action, and combinations are concerned, when men are distracted in mind, and the course of their thoughts is not voluntarily directed to some definite object; so that by a psychological process the phenomena of the waking state may be partly transformed into those of dreams. The vivid character of the image, presented to the senses as if actually there, is common to both phenomena. The way in which we begin to dream shows how, owing to our physiological conditions, we pass through regular stages from the waking state into that of sleep.

"Nuovo pensiero dentro a me si mise,
Dal qual più altri naequero e diversi;
E tanto di uno in altro vaneggiai
Che gli occhi per vaghezza ricopersi,
E il pensamento in sogno trasmutai." *

So Dante writes in the "Purgatorio" with deep and subtle truth. Each man can verify for himself the exactness of the great poet's description.

* A new thought entered my mind, whence others, differing from the first, arose; and as I roamed from one to another I was tempted to close my eyes, and thought was changed into a dream.

I myself can readily study the phenomena of dreams, since I never sleep without dreaming so vividly that I remember all the circumstances in the morning. I have used all sorts of artifices in order to trace the beginning of sleep and dreams, and always with the same result, so that I am certain of the accuracy of experiments which have been repeated a hundred times. I have examined other persons who have made the same observations, all of whom agree with me.

When repose, the herald of sleep and dreams, begins, my thoughts wander in an irregular and somewhat confused manner. As they are gradually subjected to the associations to which they successively give rise, they are transformed into more vivid images, a vividness which is always in inverse proportion to the attention. This gradually produces the state which has been described by Maury and others as hypnagogic hallucination; that is, the images seem to be real, although the subject is still partly awake, and the voluntary exercise of thought is lost from time to time in this species of incipient chaos. It is at this point that images are really most intense, and that every idea assumes a body and form, every image a reality: finally, when the body and the brain have reached the physiological conditions of sleep, thoughts which had been changed into hypnagogic images in the intermediate stage between sleep and waking, are altogether transformed into the real images of dreams.

By an effort of will I have often been able to surprise myself in this intermediate stage, and the same thing has been done by others, and it always appears that this is the real moment of transition from wakefulness to dreaming. I have been able to verify the fact that the first dream is only the continuation of our last waking thoughts, which have now become dramatic and real. I have also observed that this intermediate stage between waking and dreaming, during which the images are real and vivid, although we are still conscious of our real condition, goes on for a long while, sometimes for a whole night, with brief intervals of sleep. This has occurred to me when I was kept awake, either when travelling at night, or when I had taken a large draught of water before lying down (other liquids or food does not produce the phenomenon) or if I have been looking during the day at objects illuminated by dazzling sunshine. In all these circumstances the bright and vivid images appear reduced to an almost miscroscopic scale, although very distinct in form and colour; in ordinary cases, the images appear of the ordinary size, but not without a tendency to become smaller.

I believe that there is a physical cause for the reduction and attenuation of the images in the excessive excitement of the retina, or central encephalic organ in which images are formed in conscious concurrence with the cortical part of the

hemispheres. Owing to the excitement caused by wakefulness, by fatigue, by sunshine, or in some cases by the condition of the nerves of the stomach, the objective projection on psychical space, partly transmitted by heredity and gradually formed by associations and local signs,* is arrested by the innate force of the image on the organ, and it appears to be smaller and in proportion with the relative smallness of the image which is produced by minute vibrations and by the susceptibility of the cellule. This intermediate and persistent stage of hypnagogic images serves in every way to explain the physical genesis of involuntary hallucinations.

As a proof that the image physiologically assumes the form of a real appearance, I may mention the experience of myself and others. When suddenly awakened from a vivid dream I have sometimes, even when I was fully awake, seen for an instant the figures of my dream still moving, and projected on the wall. This fact shows that even the images of our waking state have, in the physiological conditions of the brain, a tendency to take real forms, so that they may be termed normal, or more properly, inchoate hallucinations, corrected by the conscious efforts of our waking state and external consciousness. So that it might be said that dreams are at first the transformation of our waking thoughts into

* See the theory by Lotze of local signs in the formation of the idea of space, completed and modified by Wundt and others.

normal images and hallucinations, and afterwards into those of dreams, properly so called.

If the hypnagogic phase actually affects the cerebral cellules in connection with the various senses of which they are the organs, the phases of sleep and dreams, strictly so called, have more general conditions. The idea, converted into an image presented to the senses, may thus be said to have three stages: that of the waking state, which depends as we have said on the intensity and vividness with which it is reproduced, aided by a momentary detachment from the real environment; secondly, the hypnagogic phase, in which there is the physiological action of the nervous centres, which produce the image, though still with the implicit consciousness of the waking state; and finally, the actual dream, in which this implicit consciousness is almost always wanting, and the psychical exercise of thought is completely transformed into visions and figures which are believed to be real. This in its turn depends upon the other two causes, and on the physiological relaxation of the body, which is to a great extent isolated, so that the effectual impulses of external nature are greatly attenuated.

In the waking state, the whole body and all its organs of relation and movement are in tension. The cerebro-spinal axis virtually excites the whole muscular and peripheral system in such a way that relaxation or relative repose becomes impossible.

But the brain, with all its dependencies and appendices, is not only the organ of thought, but it stimulates and directs our whole system, as numerous experiments have shown. In the waking state both these functions are exercised equally, as far as the impulses and functions of the body are concerned, and as long as the psychical and organic characteristics of the waking state continue. But in sleep the exciting influence of the brain is diminished, and the brain transmits much less of the normal excitement and normal tension to the spinal axis with its ramifications in the afferent and efferent nerves; in the waking state an external impression is promptly conveyed to the centres, whence it returns in corresponding movements with the usual connection and rapidity, whether reflex or deliberate. Since in sleep the relative condition is flaccid and torpid, this action no longer takes place. For if the brain be affected by strong impressions, and these are followed by corresponding movements due to reflex action, as is often the case, even in sleep, the dreamer is only obscurely conscious of them, and they almost wholly depend on the spinal axis, and the peripheral ganglia.

As we have said, the function of the brain is duplex; it stimulates and directs, and it is also sentient and conscious, and this second function is persistent in dreams. Although the brain is no longer directed by a power which dictates psychical acts and phenomena, yet its automatic action is not

destroyed, and to this the apparent reality of images seen is owing, since there is no longer any distraction from the external world, or, at all events, its impulses are so attenuated as to be unobserved. In such conditions past images recur with an appearance of reality owing to the mnemonic and automatic action of the brain; such a tendency exists in the waking state, and the images are associated and dissociated in a thousand ways, by means of analogies, resemblances, former combinations of facts, and series of facts analogous to those of the waking state, and are modified by suggestive impulses. We have experimental proof, to which I can add my own irrefragable witness, that the stimulating influence exerted by the brain in the waking state is dormant in sleep, and that only its automatic act of representation remains active, with the occasional exercise of an aroused and conscious will.

The following strange and unpleasant phenomenon generally occurs to me once or twice a year. All at once, in the midst of a deep sleep, I become wide awake; I am fully conscious of myself, of the place where I am, of my position and the like, and wish to move like a person who is fully awake. Yet for some time this is impossible; the psychical, cerebral faculty is perfectly awake, and master of itself, but not the stimulating faculty, so that the limbs do not respond to the first impulse of the will. All my efforts are unsuccessful; I only succeed in escaping from this

unpleasant situation by uttering with great difficulty some inarticulate sound, which acts as a shock, and I thus obtain the mastery of my body, for the nerves of speech and the muscular movements of articulation also fail to answer to my will. If this occurs when I am alone, the struggle is severe, and there is a violent shock to the whole body before its equilibrium is restored and the motor function of the brain resumes its office.

It is therefore manifest that the stimulating function of the brain is dormant in sleep and dreams, but its automatic, psychical function persists; it sometimes happens that the stimulus of the will is awakened before the stimulus of motion, and that the brain may be aroused to consciousness for some moments before it has resumed its normal functions as a stimulating organ, which were attenuated and relaxed in sleep. The abnormal condition of paralysis proves and confirms this fact.

Let us now ascertain the cause of the various psychical and physiological conditions which aim at and often succeed in presenting to the mind a mere representative sign as a substantial and real image. What is the cause of the apparent reality of dreams? The image is clearly a psychical phenomenon, containing a sensible element of which we are conscious; the fundamental faculty of the perception is exerted on it as on a real object, and the immediate results are precisely identical. The reader will remember

that we have shown that a phenomenon involves the intuitive idea of an active subject, so that the image also, in accordance with the innate faculty of perception, must normally appear to the mind as such. When this is not the case, it is because the normal effect of natural phenomena, to which our attention is constantly directed, and our mental education and hereditary influence, have accustomed us to distinguish at once between the mere idea and the real object, and thus we discern the difference between the normal action of thought and sense, and illusions, hallucinations, and dreams. But since these psychical and physiological conditions lose their force when the habit and actions of our waking state are dormant, the primitive and innate entification of the image quickly recurs, as we can plainly see from the previous analysis.

This is so much the case, that some savage peoples even now find it hard to distinguish real events from those of dreams, and this is owing to a defect in their memory or to the imperfection of their language. In fact, all civilized and barbarous peoples in the world have without exception believed, and still believe, in the reality of images seen in dreams, and their personification has been the source of an immense number of myths. Even now, with all our civilization and advanced science, not only the common people, but many of those in fashionable and tolerably cultivated society, believe

in the reality of dreams and in their hallucinations, and derive from them fears, hopes, and warnings for their future life.

I will give one instance in a thousand to prove the innate tendency even in the act of dreaming to transform the image into a real object. It appeared to me that I was in a large room filled with acquaintances and strangers, who discussed an event which had really occurred in the city a few days before. All at once I raised my eyes to the wall of the room, and saw a large picture, representing a landscape with distant mountains, streams, cottages, and animals. As I looked, the picture was gradually transformed into a real object, and I found myself, together with the company before mentioned, in the midst of the fields, on the bank of the river, and within one of the cottages.

In another dream, I appeared to be conversing with an old soldier on the shores of a lake; after some incoherent talk, he began to describe a bloody battle in which he had taken part; he had not gone far before the narrative was changed for an actual occurrence, and I was in the midst of a real battle, such as the soldier had undertaken to describe. Another night I dreamed that I was reading a tragic poem, relating terrible deeds of blood and rapine, and suddenly I seemed to have become an actor or real spectator of that which I had at first read in a book. In another strange dream I was going over a difficult

pass in a hired carriage, and I seemed to see before me a friend from whom I had parted on the previous day, when he got into an omnibus to return to the country. I soon saw in the distance a large coach-builder's establishment, a vast enclosure with sheds and carriages, and in the *piazza* I saw the manager, a man I knew, who had really some appointment in a carriage manufactory; the building recalled by association the familiar appearance of the high chimneys which rose above the roof, and while thinking of those chimneys with my eyes fixed on the manager, he appeared to me to be changed into a very high chimney, still bearing a human face. Finally, not to multiply examples, I remember a dream in which I was present at a popular disturbance, where one woman, more furious than the rest, came to blows with her husband, and called him a dog. Suddenly the scene changed, and I was transported to a courtyard in which there were poultry, pigs, and a fine dog of my acquaintance, called Lightning. Again the scene changed, and I found myself in a country district with some friends, exposed to a violent storm of thunder and lightning.

We clearly see from these facts that whatever may be presented to the imagination is transformed into a real object in the dream itself, so that it might be called a dream within a dream, and in the last instance the transmutation passes through three images and consecutive objects. This transmutation

not only consists in the transition from our waking thoughts to the image of our dreams, but it takes place in the act of dreaming; such is the power of the faculty of perception, in which we find the first origin of myth in man, and its roots also in the animal kingdom. Thus the genesis of myth, as far as the entification of the image is concerned, is the same as that of dreams.

The normal illusions of the senses, which are believed to be real by primitive men, and by those ignorant of physical laws, have a similar origin. The objection of such phenomena as a mirage, or the tremulous effect produced in tropical regions by the refraction and reflection of light on trees, rocks, and mountains, so well described by Humboldt, is due to ignorance of the laws of nature, and this is in fact an entification of the phenomenon, occasioned by the innate tendency to animation which is proper to the perception. In this it is easy to trace the genesis both of myth and dreams. The fact of hallucination is more complex, even in its normal state, that is, in those general conditions of mind and body in which reason has complete command over us.

Without entering into any analysis of the various forms of hallucination of which many able psychologists and physicians of the insane have treated, let us turn to the more ordinary cases in which an image of the mind is projected on the external world so as to appear real. The roots of such a phenomenon

are strictly organic, and belong to the centres in which the image is formed, as we have already observed; this image sometimes stands out in such vivid relief on the psychical space that it seems to be an external, not, as it usually appears in less vivid form, an internal intuition. The hallucinations which Nicolai describes himself to have experienced may be taken as a classical example. When Andral was returning from an autopsy, he clearly saw the corpse stretched before him as he entered his room. Goethe, Byron, and many others, have been affected in the same way. I myself have occasionally had hallucinations of the kind when in a perfectly healthy condition of mind and body; one, in particular, of a very vivid character, occurred when I awoke one morning and seemed to see a tall and venerable priest entering my chamber. It is needless to multiply examples; similar facts abound in classic books in English, French, German, and other languages. Let us rather study the phenomenon and trace its origin.

It is clear on the one side that the images of the hallucinations of sight or hearing appear to have a real existence, so that they may be observed and studied with ease; and it is also certain that this image has no external existence, and is simply a cerebral fact, due to the organs adapted for perception. Without considering the cause of the external projection, to which I have already alluded, since perhaps its physiological and psychical genesis

is not yet fully understood, we must consider the image, so far as it is believed to be real.

In cases of normal hallucination the reason is intact, and the observer is conscious of the illusion, yet notwithstanding this positive judgment the image has an appearance of complete reality. The cause of this illusion is evidently the same as that of the illusions of dreams, and of the origin of myth; namely, that everywhere and always the mental or natural phenomenon and its image are respectively entified. In the normal waking state, habit and other causes on which we have touched render our ideas of things altogether immaterial, as merely psychical forms and representative signs, but when the excitement of the organs increases, so as to present them to the consciousness as objective images, then, owing to the interruption of the ordinary process, they are suddenly entified, and appear as an external phenomenon. Hallucinations are therefore explained by our theory, and it is further confirmed by the hallucinations of animals, and especially by the delirium of dogs and other animals affected by hydrophobia, or by cerebral excitement artificially produced by alcoholic and exhilarating drugs.

If a man is habitually subject to many and various hallucinations, and his sane judgment esteems them to be such, they are undoubtedly unusual phenomena, but they do not in any way injure the rational exercise of the mind. It is only when he

believes the images to be real that the abnormal state begins, termed delirium if it is of short duration, and madness if it is permanent. We must examine hallucination under these new conditions.

In the delirium of fever, or in various forms of disease, the cerebral excitement is so great that not only the deliberate exercise of reason, but the power of estimating external objects is lost, and the organs of the senses are so completely altered, that the perceptions themselves are exaggerated and confused. In this state hallucination reaches its highest point, and the patient sees, hears, and feels, directly or indirectly, strange and terrible things: wild beasts, enemies of all kind, torments; or again, pleasing and agreeable images. Independently of the alteration in various sensations produced by the morbid alteration of the special organs which induce them, the real cause of this phenomenon consists in the objection of mental sensations and images. Such an objection of images or sensations, considered in the act which transforms them into a reality, depends on the same cause as all other acts of perception; there is always an entification of the phenomenon, which in this case is a vivid internal image, appearing to be external and real.

The entification of images is still more direct and powerful because in this morbid crisis the necessary corrections made by reason cannot take place, since the sick man is for the time deprived of it, and he is in fact a dreamer, whose condition is intensified by

abnormal excitement. Entification is now displayed in its nude and native state, and serves to explain the constant mental process, and the true nature of the representations of the intellect. The transition is easy from delirium to madness, for although an insane person is not always delirious, but sometimes calm and composed, yet there is a fundamental resemblance to delirium in the change in his states of consciousness and its relative organs, which imply a constant hallucination. The most famous and acute physicians of the insane estimate that eighty out of a hundred insane persons are subject to hallucinations. The morbid condition which generates them is also produced by debility, by anæmia, and the senile decay of the cerebral organs, since they occur in dementia, idiocy, and old age, and the physiological and mental causes are the same; the power of fixing the attention and governing the thoughts is diminished, owing to the weakening of the vivid consciousness of the external world, produced by a torpidity of the afferent organs. In these cases the recollections which are not altogether lost sometimes reappear as hallucinations.

The hallucinations of madness, in its various forms of dementia, idiocy, and dotage, are all, apart from their morbid and organic conditions, derived from the same source which produces myths, dreams, and normal hallucinations; the objective entification of images is due to the innate faculty of the perception, which leads to the immediate personification of any

given phenomenon. We have shown that, given a sensation, there naturally arises the implicit notion of a subject and a cause, and this natural impulse is further developed by the influence of heredity; both in man and animals the constant and powerful sense of individual life is infused into the phenomenon perceived.

The various forms of madness throw a clearer light on this necessary and primitive fact of human and animal perception. The act of sensation may then be said to be under its own direction, and generates itself in the automatic exercise of the brain, as in dreams, without the explicit, disturbing, and modifying influence of reflection, and the habit of rational analysis. The act of sensation is spontaneously completed and developed in and with its own constituents, and since it is isolated from other modes and exercises of thought, its real nature appears. The hallucinations of madness, produced by the mental realization of images, either detached or in association, prove that all our mental images or ideas have a tendency in themselves to become real objects of consciousness; with this difference, that a sane man recognizes these mental entifications by their mobility and incessant alterations, which contrast with the fixity and permanence of external and cosmic phenomena.

The following considerations will confirm the truth of these facts. In our advanced state of

civilization, thought may, after so many ages' exercise, almost be said to have become part of the organism by the indisputable effect of heredity; and the phenomenon of the recurrence to memory of past facts and distant places is obvious and intelligible, since our judgment of them is never subject to illusion, or only in rare instances and in abnormal conditions. But this judgment is less obvious and easy in the case of primitive savages who have advanced little beyond the innate exercise of the intelligence. The rational analysis of the states of consciousness has not been made, and hence their special and general distinctions are seen with difficulty or not seen at all. Consequently the primitive and natural amazement of man must have been great, when by day, and still more in the lonely silence of night, persons, places, and his own past acts recurred to his mind, and he was able to contemplate them as if they were actually present. He was incapable of giving an explanation of this marvellous fact in the rational and reflective manner which is possible to psychologists and to all civilized men. This revival of the past appeared to him as a fact in its simple and spontaneous reality; he made no attempt to explain it, but it was presented to his consciousness like all other natural facts. The only explanation of the phenomenon appeared to him to be that these images did not recur to the mind by the necessary action of the brain, but that by their own spontaneous power they

were recalled to take their part within his breast: he supposed the phenomenon to be objective, not subjective.

Prophecy, for instance, was often supposed to be a recollection, and some primitive accounts of the genesis of things, handed down by tradition, were reputed to be inspired, and objectively dictated to the mind. The Platonic theory of reminiscence relies on these conceptions. The power which recalled the images to memory was supposed to be external, and identical with that which raises up the images of dreams; primitive man traced a fanciful identity between the phenomena of memory and of dreams, and the distinction between them was not supposed to consist in the actual images, but in the modes of their appearance in the waking or sleeping state. The images assumed in the memory a relative reality, somewhat resembling those of dreams. In fact, some savages do not clearly distinguish between the images of these states, and see little difference between the spontaneous recollection of things, the fancy, and dreaming. This also occurs in children, who at a very early age often call by name absent persons and things which recur to their memory; and on the other hand they do not distinguish the facts of real life from those of dreams. I have observed this fact in several children.

Among primitive peoples it often happens that an object with which they are unfamiliar, but which has some analogy with those with which they are

acquainted, becomes associated with the latter, and is constituted into a compound being, endowed with life. The Esquimaux believed the vessels commanded by Ross to be alive, since they moved without oars. When Cook touched at New Zealand, the inhabitants supposed his ship to be a whale with sails. The Bosjesmanns ascribed life to a waggon, and imagined that it required the nourishment of grass. When an Arauco saw a compass, he believed that it was an animal; and the same belief has been held by savages of musical instruments, such as grinding organs, which play tunes mechanically. Herbert Spencer mentions similar behaviour in some men belonging to one of the hill tribes in India; when they saw Dr. Hooker pull out a spring measuring tape, which went back into its case of itself, they were terrified and ran away, convinced that it was a snake. From these facts, which might be multiplied indefinitely, it not only appears that everything is spontaneously animated by man, but also that the images of his memory are fused with those which are actually present, since their respective factors are esteemed to be equally real. This primitive objection of the images of the memory also occurs in the mythical representations of dreams, which, as the images of absent objects, have much in common with the images of the memory. In fact, all peoples, as we have seen, have believed in the reality of dreams.

The North American Indians believe in the existence of two souls, one of which remains in the body

while the other wanders at pleasure during the dream. The New Zealander supposes that the dreamer's soul leaves his body, and that he meets the things of which he dreams in the course of his wanderings. The Dyak also believes that the soul is absent during sleep, and that the things seen in dreams really occur. Garcilasso asserts that this was likewise the Peruvians' belief. A tribe in Java abstains from waking a sleeper, since his soul is absent in dreams. The Karens say that dreams are what the *là* or soul sees during sleep. This theory is also found among more civilized peoples, as for instance in the Vedic philosophy and the Kabbala, and it has come down to our days among the common people, and even among those of some culture.

One belief connected with dreams, generally diffused among all savage and civilized peoples, is that of the appearance of dead men, or of their ghosts. Of this all the traditions and popular myths in the world are full. Such a belief, first excited by the vision of the dead in dreams, is easily aroused in the savage or uneducated mind, even when he recalls to memory while he is alone, and especially at night, the image of one whom he loved in life. Affection, and the lively emotion of sorrow and desire give such a life-like appearance to these images that they become objectively present to the mind, to console the mourner, or, on the other hand, to threaten the murderer. I have more than once heard persons of

all classes, after the death of children, of a husband or wife, whom they have injured or imagine that they have injured, either during life or by not fulfilling their last wishes, declare in all good faith that the form of the dead is often present to their memory and visible while they are awake; thus implying that the dead mercifully appear to comfort their mourning friends, or else to reproach them for not fulfilling their promises. In a word, these images did not seem to them to be subjective, and an ordinary phenomenon of the memory, but objective and personal apparitions within the soul. The cases are not rare in certain dispositions of mind, in which the projection of these images on the memory gradually produces madness. We must not forget that psychical phenomena in general are very differently regarded by the savage and the civilized man, since the latter is accustomed to analysis, and to the real distinctions of things. If this canon is forgotten we shall fall into grave errors in the attempt to interpret the evolution and primitive history of thought and of humanity.

We shall more readily understand the nature and genesis of all these hallucinations, and of normal and abnormal illusions, if we study another phenomenon of frequent occurrence which I myself have often had occasion to observe. I mean the illusion or hallucination which does not consist in the absolute projection of an internal image with an external semblance of reality, but which presents it in the twilight as an

object of uncertain form, either in a room or out of doors. It often happens, as I and others have experienced from childhood, that a dress or other object lying by chance on a chair, or on the ground, or hanging on a piece of furniture or a peg, seen in connection with the other things near it, is transformed into a person or animal, in a sitting or standing posture or lying at full length, as if it had been a spectre or phantasm; somewhat like the figures which we all take pleasure in tracing in the strange and mobile forms of clouds. The fantastic figure sometimes appears instantaneously and at the first glance, sometimes it is only gradually made out; but in both cases, as we shall see, its genesis is the same. Although in the former case that which in the latter is gradually developed *appears* to be developed all at once, yet in reality it passes through the same stages.

Let us now consider the second mode; and in order to be perfectly accurate, I will describe one out of many apparitions which I saw so recently that its gradual formation is retained distinctly in my memory. On a small three-legged table beside my bed there was a little oval mirror, on which hung a woman's cap, which fell partly over the glass: there was also an easy chair, on which I had thrown my shirt before going to bed, while my shoes were as usual on the floor. I awoke towards morning, and as I chanced to look round the large room, in the uncertain light of a night-light which was almost burnt out, my eyes fell

upon the easy chair. Immediately I seemed to see a head above it, corresponding to the mirror, and a vague and confused image of a person seated there. As I am accustomed to do in similar cases, I closed my eyes for a little, and on reopening them I looked at the appearance with attention and interest; this time the person or phantasm had a less confused outline, although I did not see the form distinctly, nor the features, nor its precise position. Yet in this second observation, I obtained an idea of it as a whole, and in details.

On further examination the face and person stood out more clearly, and the features became more distinct, the longer I looked. Each accidental fold or shadow on the cap was transformed into bright eyes, strongly marked eyebrows, into the nose, mouth, hair, beard, and neck; so that as I went on I had before me a perfectly chiselled face corresponding to the type which had first flashed across my mind as the confused impression of a face conveyed by the cap and mirror. The same process of evolution was pursued with respect to the limbs, the breast, arms, legs, and feet; parts of the body which at first appeared to be vague and indeterminate gradually, and as if by enchantment issued distinctly from every fold of the shirt, from every shadow, angle, and line, so as to compose what Dante would call *una persona certa*. Finally I saw before me a man dressed in white, of an athletic form, sitting

in the easy chair and looking fixedly at me: the whole body was in harmony with the head, which had first resulted from the rude resemblance to a human face. The image appeared to me so real and distinct that on rising from the bed and gradually approaching it, its form did not vanish, even when I was near enough to touch the object which produced it. An analysis showed that the features, limbs, and position corresponded in every point with the folds and relative position of the articles of dress which had formed it. A similar process, issuing in such apparitions, is a frequent cause of illusions, which in the case of ingenuous, superstitious, and primitive peoples, may lead to the firm conviction that they have seen an apparition. This has certainly been the case in primitive and even in civilized times, and has given occasion to myths, legends, and the worship of tutelary deities and saints.

If we consider the causes of such a phenomenon, and analyze its elements and motives, we shall, I think, discover that it goes far to explain many normal and abnormal hallucinations.

In the first place, there is in man a deep sense of the analogies of things, partly developed by the organic tendency to regard any given object of perception as subjective and causative, and to infuse into it our own animal life, a tendency confirmed by education and the practice of daily life. Such analogies, which find their expression in metaphor,

are very vivid and persistent in the vulgar and in those persons who approximate most closely to the primitive ingenuousness of the intelligence. The most frequent analogies are between natural phenomena and objects and animal forms. Analogies are also found between the various forms of inanimate natural objects, but the former are more usual, and especially those which refer to the human form. There are numerous and familiar instances of the names of men or women given to mountains, rocks, and crags, because they have some remote resemblance to some human feature or limb. Every day we may be called upon to see a face in some mountain, stone, or trunk of a tree, in the outline of the landscape, a wreath of mist or cloud. We are told to observe the eyes, nose, mouth, the arms and legs, and so on.* Every one must remember to have often heard of such resemblances, even if he has not himself observed them. All the facts and laws which we have observed explain why the sudden appearance of some vague form in an uncertain light, reminding us in a confused way of the human figure, instantly causes us to trace a resemblance to man rather than to any thing else. It must be noted, as my experiment has already proved, that in this first

* Sometimes the name of a person, or of some part of the human form, has been bestowed on a natural object without reference to their analogy, but in this case the epithet has the converse effect of leading us to imagine that it possesses the features or limbs of the human form. And this is of equal value for our present inquiry.

sketch of a phantasm in human form, a general, though indefinite type of the whole figure has spontaneously arisen, to which it is made to correspond. This is the key to the ultimate perception of the phenomenon. What may be called the prophetic type of the figure which will afterwards appear to us in all its details, although it may seem to be produced by external resemblance, is in fact the product of the mind, which has been unconsciously exercised in its construction.

In fact, out of the immense variety in faces, and in the general form of persons, of gestures, fashions of dress, attitudes in rest and motion, which are indelibly impressed on the memory, every one constructs general types for himself; types which are revealed in the allusions made in our daily conversation to the resemblances which we are continually observing. These remain in the memory, with all the manifold resemblances, as well as the ideal of certain types in which the numerous forms we have seen and compared are formulated. We know that when the memory has been dormant, which is often the case, it may be awakened by the stimulus of association, of analogy, or of will, so as to reproduce the forgotten ideas and sensations which are thus again presented to the consciousness. When, therefore, one or more objects are seen in an uncertain light, so as to present a confused appearance of the human form, its general lineaments are unconsciously made by us

to correspond with the human type already existing in the memory, and this type presides in the subsequent composition of the reproducing artist who observes the phantasm. The unconscious mental labour which is accomplished in the reproducing cellules of past impressions and ideas by the instantaneous creation of the type, gathers round this type the form and features corresponding with it, which had its earlier existence in our own experience. The external pose and indefinite modification of the objects appear to correspond with the gradual mnemonic revival of the typal form, and they reciprocally stimulate and react on each other. For while a fold, shadow, or line of the objects seen appear to correspond with some feature of the mnemonic type, on the other hand, a fold, shadow, or outline of the object recalls a feature of the inward phantasm composed by the memory.

In this process the mnemonic details which are in accordance with the pre-existing type, and sometimes also in accordance with some remarkable face or person which was the first to present itself to the mind, serve as a model for the accidental form of the external object or objects which correspond to it; this in its turn recalls features which remain in the memory, and in this way the external form of this particular phantasm is gradually chiselled into full relief. The more intently we regard the object which is modified to suit the mental image, the more per-

fectly they agree together, and the apparition stands out with more vivid distinctness. This will be the experience of every one to whom such a phenomenon appears, and a dispassionate analysis of all the phases of this fact must fully confirm our theory.

Such a fact, which is implicitly included in the general law we have laid down for the origin of myth, will also as I think throw further light on the origin of many hallucinations, both in normal conditions of mind and in the abnormal state of nervous disorders. The different appearances of objects, animals, and men, the voices, words, songs, and conversations seen and heard in these hallucinations, are produced, by an internal impulse as well as by a stimulus from without; they are internal in the images and sensation already unconsciously impressed upon the memory, and they are external in the accidentally modified form in which they occur in sensible objects, so that they act reciprocally as an incentive and impulse to each other.

If in normal hallucinations the vividness of the internal image is in certain physiological conditions projected outwardly, the configuration and accidental form of the external objects contribute to complete the composition in accordance with the nature and design of this internal image. Sometimes the physiological conditions of hallucination are so powerful that it is at once produced by the appearance of an object which has some analogy with the mental

image. Whatever may be the genesis and primitive character of the idea of space, and its psychical and physiological relations to actual space—a question which has been the theme of so much discussion in our time—it is certain that first habit and then hereditary influence cause us to have the sensation and apprehension of a psychical space, which may be termed artificial and congenital, and upon which the various impressions of the senses are spontaneously projected. Of this there is an evident proof in the fact that if we look at the sun or any bright object, such as the windows of a room in the day time, and then close our eyes, so as to make the vision of external space impossible, the image of the sun, sometimes of a different colour, or of the window, is projected into the darkness at some distance from us, and moves about this psychical space. This phemonenon also occurs in the subjective sensations of hearing, since the sounds do not appear to be close to the ear, but at a distance. We are not here called upon to discuss the causes which generate the appearance of this psychical space, but the fact is indisputable; so that conversely it becomes intelligible how the internal image may be projected in the same way, or may at least appear to be externally projected in hallucinations. This surprising phenomenon is only a modification of the ordinary exercise of the psychical and physiological faculties in the projection of images; of which, after the idea of space has been

formed by primitive experience, habit and education are the chief factors.

Hallucinations, in the cases observed above, are due to an external impulse; and this is especially the case in madness and other nervous disorders; since a critical observation and clear discernment of things is wanting, some object of vision, a voice, phrases, or sounds are much more apt to act as a stimulus to a vast field of visual hallucinations, or to a long succession of sentences and speeches. It is not, therefore, wonderful that in an ecstasy, for instance, in which all the faculties are concentrated on very few ideas and images, or perhaps on one only, every external sign, whether obvious to sight or hearing, combined with the mnemonic effort already explained, is modified to correspond with these vivid and exalted images; thus constituting the wonderful phenomenon of ecstasy. In such a case the ecstatic phenomenon in persons subject to these nervous affections is often invested with fresh wonders by the additional sensations of light and subjective colours; this is not uncommon even in persons of a sane mind and body, but undoubtedly it is more frequently the case in those whose mental and physical conditions are abnormal. It is not rare to hear an ecstatic person recount divine visions, suffused with extraordinary light and glory.

In order to contribute to the researches of others into the nature of this phenomenon, I must be

permitted—not from vanity, but from a desire that my own imperfections may serve the cause of science however slightly—to relate some facts, personal to myself, which bear upon the question, facts of very general experience. From my childhood I have had, both by day and night, various subjective sensations of light which I was, as a person of perfectly sane mind, able to observe dispassionately. After reading for a long while, or when fatigued by sleeplessness, mental excitement, or some temporary gastric derangement, I see clear flames circling before my eyes. These are in a small, oblong form, arranged at brief intervals in concentric curves, and composing a moving garland projected upon space, tinged with a yellowish light, shading into vivid blue. Sometimes this figure is changed for stars, twinkling in a vast and remote space, as in a firmament. In addition to this phenomenon, I have about twenty times in the course of my life experienced other subjective and more extraordinary sensations of light, not unknown to others. This phenomenon occurs when I am in a normal condition of health, and always begins with a confusion of sight, so that I am unable to see objects and the faces of people distinctly; after which everything within the range of vision becomes mobile and tremulous. This state continues for ten minutes, and then clear and distinct vision returns. Next a lucid circle, zig-zagged in acute angles, appears close to the eyes, now on the

right, now on the left. It moves in a somewhat serpentine course, and is broken in the centre of the lower half. It withdraws from the eye into subjective space, and the shining band of which it is composed gradually loses its sharp angles, and becomes wider and undulated, while still in motion.

Another remarkable sensation follows. The shining band, which has dilated until it is withdrawn from the eyes, whether closed or open, to an apparent distance of several yards, becomes tinted with all the colours of the rainbow, standing out in such vivid splendour on the dark background that I have never seen them equalled in nature. Indeed the beauty of this phenomena is amazing. The band, inlaid with various colours, now occupies the whole space, maintaining an equal distance from the closed eyes, and moving continually with a rhythmic undulation, while it constantly becomes more vivid. The moving circle continues to dilate until it slowly fades, and at last completely disappears. From its beginning to the end, the vision occupies from twenty to twenty-five minutes.

Throughout the phenomenon I continue to be perfectly collected and free in mind, so that I can observe it in all its details with perfect calmness, and can also impart my observations to the persons with whom I happen to be. Only when the subjective sensation has ceased, I feel an obscure pain in the brow of the eye in which the phenomenon occurred. This is

readily explained by the well-known interlacing of the nerves, and the action of the hemispheres.

Supposing that such phenomena occur, as they more readily do, in persons predisposed to nervous affections, although not insane, in times and in a society agitated by religious excitement, or in persons habitually contemplative and occupied with spiritual images and thoughts; if in moments of ecstatic emotion they should perceive, in addition to the images proper to such conditions, these circling flames, which is very likely to be the case, or the iridescent aureole we have described, they would certainly accept and glorify the heavenly vision revealed to them. The revolution of the bright stars or iridescent band, preceded by the obscurity of vision which accompanies the ordinary ecstatic hallucination, would certainly be ascribed to the saints or angels, and would thus become more supernatural and consonant with the believer's idea of heaven; and these very subjective sensations might often produce the ecstatic vision, so ready to appear in the morbid conditions which lead to hallucination.

According to the process previously described, by which the phenomenon of natural hallucinations is produced by an external stimulus, these luminous phenomena would revive the memory of angelic and saintly forms, of which men were so profoundly conscious in times of religious excitement, and would be regarded as their external signs, while they would at the same time stimulate the appearance of such

angelic visions. Ultimately this would lead to the vast drama of celestial hallucinations described for us in the accounts of many ecstatic visions. They do not only occur in modern religions, but in those of the old heathen, and in the rude and unformed beliefs of savages. The ethnography of the most savage peoples of our time teaches us that the origin of very many myths is to be found in normal and abnormal hallucinations, and in the luminous visions which conform to their mental conditions. Persons subject to nervous affections, from simple epilepsy to madness and idiocy, were and still are supposed to be inspired, and endowed with the power of prophesying and working miracles; they are also venerated for relating the strange visions presented to them in the crisis of their disorder. Africa, barbarous Asia, America, Oceania, and the ignorant and superstitious people in Europe itself, abound with such facts; they have occurred and are likely to recur in civilized peoples of all times, including our own, as we know only too well.

We have thus reduced the primitive origin of myth, of dreams, of all illusions, of normal and abnormal hallucinations, to one unique fact and genesis, to a fundamental principle; that is, to the primitive and innate entification of the phenomenon, to whatever sensation it may be referred. This fact is not exclusively human in its simple expression and genesis, since it occurs in the lower animals; evidently in those which are nearest to man, and by the necessary

logic of induction in all others, according to their sensations and modes of perception. In the vast historic drama of opinions, beliefs, religions, mythical and mytho-scientific theories which are developed in all peoples; and again, in the infinite variety of dreams, illusions, mystic and nervous hallucinations, all depend on the primitive and unique fact which is also common to the animal kingdom, and identical with it; in man this is also the condition of science and knowledge. I think that this conclusion is not unworthy of the consideration of wise men and honest critics, and that it will contribute to establish the definitive unity of the general science of psychology, considered in the vast animal kingdom as a whole, and in connection with the great theory of evolution.

This primitive act of perception, the radical cause and genesis of all mythical representations, and the physical and intellectual condition of science itself, is also one of the factors and the æsthetic germ of all the arts. The constraining power which generates the intentional subjectivity of the phenomenon, and the entification of images, ideas, and numerous normal and abnormal appearances, also unconsciously impels man to project the image into a design, a sculpture, or a monument. Since an idea or emotion naturally tends, as we have seen, to take an external form in speech, gesture, or some other outward fact; so also it tends to manifest itself materially and by means of various arts, and to take the permanent

form of some object. It is embodied in this way, as it was embodied in fetishes in the way described in the foregoing chapters. Owing to this innate cause, and by the instinct of imitation which results from it, children as well as savages always attempt some rude sketch of natural objects, or of the fanciful images to which they have given rise. Drawings of animals and some other objects are found among the lowest savages, such as the Tasmanians and Australians. Nor is this fact peculiar to the lower historic races, and to those which are still in existence, but it is also to be found in the dwellings and remains of prehistoric man; carvings on stone of very ancient date have been found, coeval with extinct and fossil animals, prior to the age of our flora and fauna and to the present conformation of land and water. There are many clear proofs of the extreme antiquity of the primitive impulse to imitative arts. A stag's metatarsal bone, on which there was a carving of two ruminants, was found in the cave of Savigny: in a cave at Eyzies there was a fragmentary carving of two animals on two slabs of schist; at La Madelaine there were found two so-called staves of office, on which were representations of a horse, of reindeer, cattle, and other animals; two outlines of men, one of a fore-arm, and one of a naked man in a stooping position, with a short staff on his shoulder; there is also the outline of a mammoth on a sheet of ivory; a statuette of a thin woman without arms, found by

M. Vibraye at Laugerie-Basse, and known by the name of the immodest Venus; a drawing representing a man, or so-called hunter, armed with a bow, and pursuing a male auroch, going with its head down and of a fierce aspect; the man is perfectly naked, and wears a pointed beard. Other designs of the chase and of animals afford a clear proof of the remote period at which the primitive instinct towards the imitative arts existed.

It is peculiar to man to portray things and animals, and to erect monuments out of a superstitious feeling, or to glorify an individual or the nation; the bower-birds and some cognate species may perhaps be regarded as an exception, since they show a certain sense of beauty, and an extrinsic satisfaction in gay colours, which indeed appears in many animals. But art in the true sense and in its essential principle are the act and product of man alone, of which I have demonstrated the cause and comparative reasons in another work, so that it is unnecessary to repeat them here. Some rare cases indicate an artistic construction which is not an essential part of animal functions, and the sense of form and colour occurs in some species. But this only shows that there exist in the animal kingdom the roots of every art and sentiment peculiar to man, subsequently perfected by him in an exclusive and reflex manner, and this confirms the general truths of heredity and evolution.

When primitive man draws or carves objects, he

does not merely obey the innate impulse to give an external form to the image already in his mind, but while satisfying the æsthetic sentiment which actuates him, he is conscious of some mysterious power and superstitious influence. This sentiment is not only apparent in our own children, but among nearly all savages, of which many instances might be given; some of them are even afraid to look at a portrait, and shrink from it as from a living person.

As time went on, a belief in spirits was developed from causes already mentioned, the rude theory of incarnation followed as its corollary, and this sentiment was naturally confirmed by incised and sculptured images; for since they supposed a spirit to be present in every object whatever, this was much more the case with incised or sculptured figures of men and animals. In these figures the amulet, talisman, or *gris-gris* of savages especially consisted; portraits, however rude, of animals, monsters, of the human form as a whole or in parts, as in the universal phallic superstitions. The belief in spirits, resulting from the personification of shadows, or of the image of a man's own soul which was supposed to return from the tomb, had a mythical influence on the mode and ceremonies of sepulture, on the position of corpses, on the orientation of tombs, and their form. In fact, the mythical ideas of spirits, and the fanciful place they took in the primitive idea of the world, produced the custom of burying corpses in an upright, stooping,

or sitting position, and their situation with reference to the four cardinal points. In America the cross which was placed in very early times above the tombs is rightly supposed by Brinton to have been a symbol of the four zones of the earth, relatively to the tomb itself and to the human remains enclosed in it. One Australian tribe buries its dead with their faces to the east; the Fijians are buried with the head and feet to the west, and many of the North American Indians follow the same custom. Others in South America double up the corpse, turning the face to the east. The Peruvians place their mummies in a sitting position, looking to the west; the natives of Jesso also turn the head to the west. The modern Siamese never sleep with their faces turned to the west, because this is the attitude in which they place their dead before burning them on the funeral pile. Finally, the Greeks and all other peoples, both civilized and barbarous, including ourselves, had and continue to have special customs in burying their dead.

All the primitive artistic representations of the human form, the orientation of tombs and temples and their peculiar form, were prompted by these spiritualist and superstitious ideas; they expressed a symbolism derived from mythical ideas of the constitution of the world, of its organism, elements, and cosmic legends. This assertion might be verified by all funereal, religious, and civil monuments among all peoples of the earth, in their most rudimentary form

down to those of our times, and above all in India, China, Central Asia, in Africa, and particularly in Egypt, in America, in Europe, beginning with the Greeks and passing through the Latins down to the Christianity of our day; nor need we exclude the Oceanic races, and those of the two frigid zones.

Doubtless the purest æsthetic sentiment was gratified in the productions of the plastic arts and of design in general when civilization was at its highest perfection, among people peculiarly alive to this sentiment. At the same time, for the great majority of peoples in early and subsequent ages down to our own time, there was and is the consciousness of a *numen*, in the proper meaning of the word, within the statue or effigy, and these were unconsciously entified by the same law which leads to the entification of natural phenomena; the august presence of the gods and an artificial symbol of the living organism of the world were contained in the material form. While this sentiment took a higher development in art, and was gradually emancipated from its mythical bonds, it never altogether disappeared in artistic creations; and there are still many who would, like some uncultured peoples of early and modern times, cover up their images when they are about to commit some action which might be displeasing to these idols of the gods or saints. If we were to gauge the sentiments which really animate a man of the people, even when he looks at the statue of a great man, we should find

that in addition to his æsthetic satisfaction, he unconsciously imagines that the spirit of the dead man is infused into the image and is able to enjoy the admiration of the observers.

The worship of images in all times and places is essentially founded on this belief in the incarnation of spirits and the *numen* of fetishes. There is indeed no real difference between the superstitious adoration of a savage, addressed to his fetish, and the worship of images in many religions of modern civilization. Although people of culture, and the scholastic theory of religions, may distinguish indirect and respectful veneration from direct worship, yet it cannot be denied that the majority of the faithful directly adore the image. The general belief in relics, consisting of bones, hair, clothes, etc., is plainly an evolution of the amulets and *gris-gris* of savages. This fetishtic and idolatrous sentiment has by a gradual and necessary development been infused even into speech and writing, for written forms have been hung on plants as fetishes and idols, or placed in the temples as the symbol of perpetual prayer, and the Buddhists even erect prayer-mills. We have analogous instances among ourselves, when texts of Scripture or the words of some saint are rolled up into a kind of amulet and worn round the neck. The same sentiment is shown in the costly offering of lamps kept constantly burning before images as the means of obtaining help and favour; and in the visits made to a given number

of churches, thus transforming number into a mysterious, entified, and efficacious power, in the same way that every ancient people, whether barbarous or civilized, mythically venerated certain numbers; the Peruvians, for instance, and some other American peoples regarded the number "four" as sacred.

In addition to the cherished remembrance always inspired by portraits of those we love, a breathing of life, as if the dead or absent person were communicating with us in spirit, is perhaps unconsciously infused into the picture while we look at it. These are transient states of consciousness, of which we are scarcely aware, although they do not escape the notice of careful observers. Any dishonour or insult offered to images, whether sacred or profane, deeply moves both the learned and unlearned, both barbarous and civilized peoples, not merely as a base and sacrilegious act against the person represented, but from an instinctive and spontaneous feeling that he is actually present in the image. Any one who analyzes the matter will find it impossible to separate these two sentiments, and many disgraceful and sanguinary scenes which have led to the gallows or the stake have actually resulted from the identification of the image with the thing represented.

Even when a man of high culture and refined taste for beauty stands before the canvas or sculpture of some great ancient or modern artist, his spiritual and æsthetic enjoyment of these wonderful works is,

as he will find from the observation of his inmost emotions, combined with the animation and personification of what he sees; he is so far carried away by the beauty and truth of the representation that the passions represented affect him as if they were those of real persons. This relative perfection of a work of art, either in the way the objects stand out, in the varied diffusion of light and shade, in the movement and expression of figures, in the effect of the whole in its details and background, is all heightened and confirmed by the underlying entification of images. The process we have before described by which a confused group of objects appear to us as a human form or phantasm is also effected in this case in a more subtle way and with less effort of memory; it is all ultimately due to the primitive fact of animal perception. Our imagination can supply the resemblance, the limbs, colour, and design in a picture in which a face, figure, or landscape are slightly sketched, or in a roughly chiselled statue. We often hear the complaint that a work of art is too highly finished, and it wearies and displeases us because it leaves nothing for the imagination to supply. The remark reveals the fact, of which we are all implicitly conscious, that we are ourselves in part the artificers of every external phenomenon.

We need not stop to prove a truth well-known to all, that architecture and all kinds of monuments lend themselves to a symbolism derived from ancient

and primitive popular ideas. This was the case in India, Mesopotamia, Phœnicia, Egypt, Judæa, Greece, Ancient and Christian Rome, and in the ancient remains found in savage countries and in America. The freemasons of the Middle Ages united the earliest and most varied traditions with the symbols of Christianity. We unconsciously carry on the same traditions, preserving some of their forms, although the meaning of the symbol is lost. Tombs in the open air which enclosed a spirit, and round which the shades roamed, were the first sacred buildings, from which by an easy and intelligible evolution of ideas, temples, with a similar orientation, and other works of architecture, both religious and civil, were derived. If we follow, step by step, the development of the tomb into the temple, the palace, and the triumphal arch, we shall see how the outward form and the human and cosmic myth were reciprocally enlarged. Ethnography, archæology, and the history of all peoples indicate their gradual evolution, so that it is only necessary to allude to it; proofs abound for any intelligent reader. Even in modern architecture the arrangement of parts, the general form, the ornaments and symbols relating to mythical ideas, still persist, although we are no longer conscious of their meaning; just as human speech now makes use of a simple phonetic sign as if it were an algebraic notation, in which the philologist can trace the primitive and concrete image whence it

proceeded. The arts also, like other human products, follow the general evolution of myth in their historic course; the primitive fetish is afterwards perfected by more explicit spiritual beliefs, and is combined with cosmic myths; these are slowly transformed into symbolic representations, which dissolve in their turn, and give place to the expression of the truth and to forms which more fully satisfy the natural sense of beauty and its adaptation to special ends.

The arts of singing and of instrumental music have the same origin and evolution as the others. Vico, Strabo, and others have asserted that primitive men spoke in song, and there is great truth in the remark. Since gesture and pantomime help out the meaning of imperfect speech, which was at first poor in the number of words and their relative forms, and this is still the case among many peoples, so song, vocal modulation, and the rhythmic expression of speech seem to stimulate emotion. In truth, the mental and physiological effort which tends by vocal enunciation to present the image or emotion in an external form, is on the one hand not yet fully disintegrated, and on the other the greater or less intensity of feeling involved in primitive languages a corresponding vocal modulation to supplement it, just as it required gesture and pantomime. Thus speech, gesture, and song, in the larger sense of the word, had their origin together. This is also true of many of the languages of modern savages, and of those of

more civilized peoples, such as the Chinese, which have not quite attained inflection; in this case the frequent repetition of the same monosyllable conveys a different meaning, not only from its relative position, but from the modulation and tone in which it is uttered. The same thing may be observed in children who are just beginning to talk.

Rhythm, or the graduated and alternate action and reaction with which a vibration begins and ends, is a universal law in the manifestation and movements of all natural phenomena; a law which is revealed on a grand scale in all the recurring periods of nature, whether astral, telluric, or meteorological, as well as in the form and manifold phases of organisms and their modes of reproduction. This universal law also applies to the whole mental and organic system of animals and men, whenever they become conscious of their own existence. The same universal rhythm constitutes the fundamental form of sound in the vibration of metallic bars, or of strings, and becomes perceptible to the external senses by means of our organ of hearing, as also by the external and innate necessity slowly developed by our habits of consciousness, which may be termed the external causes of its organic evolution and constitution.

By these organic and cosmic tendencies, and by the intrinsic impulse towards modulation of sound already explained, speech first issued from the human breast in harmonious accents and rhythmic form, and

these became in their turn the causes and genesis of versification and metre. The classic experiments of Helmholtz show that each note may be regarded as a harmonic whole, owing to the complementary sounds which accompany it in its complete development. With reference to our own race, the genesis of the composition of verse and metre are shown by the researches made by Westphal and others into the metrical system of the Vedic Aryans, the Turanians, and the Greeks, since the fact that their metres were the same implies a common origin. The demonstration is complete, if we compare the iambic metre of Archilochus with that of the Vedic hymns. There are in both three series of iambuses—the dimeter, the cataleptic trimeter, and the acataleptic.*

* While these sheets were passing through the press, I was informed of Berg's work on the Enjoyment of Music. ("*Die Lust an der Musik.*" Berlin, 1879.) Berg, who is a realist, inquires what is the source of the pleasure we experience from the regular succession of sounds, which he holds to be the primary essence of music. He finds the cause in some of Darwin's theories and researches. Darwin observes that the epoch of song coincides with that of love in the case of singing animals, birds, insects, and some mammals; and from this Berg concludes that primitive men, or rather anthropoids, made use of the voice to attract the attention of females. Hence a relation was established between singing and the sentiments of love, rivalry, and pleasure; this relation was indissolubly fused into the nature by heredity, and it persisted even after singing ceased to be excited by its primitive cause. This applies to the general sense of pleasure in music. We have next to inquire why the ear prefers certain sounds to others, certain combinations to others, etc. Berg holds that it depends on negative causes, that the ear does not select the most pleasing but the least painful sounds. He relies on Helmholtz's fundamental theory of sounds. It seems to me that although Helmholtz's theory is true, that of Berg is erroneous, since he is quite

This observation applies to the physical and physiological conditions of the phenomenon, since primitive men could not speak without rhythmic modulation of words. We are not quite without hope of discovering by induction the origin of wind or

unable to prove his assertion that the effect produced by music is a negative pleasure. Moreover, the Darwinian observations to which he traces the origin of the enjoyment of music, not only rely on an arbitrary hypothesis, but do not explain why males should derive any advantage from their voice, nor what pleasure and satisfaction females find in it. And this, as Reinach justly observes in the *Revue Philosophique*, is the point on which the problem turns.

Clark has recently suggested in the *American Naturalist* another theory worthy of consideration. A musical sound is never simple but complex; it consists of one fundamental sound, and of other harmonic sounds at close intervals; the first and most perceptible intervals are the 8th, 5th, 4th, and 3rd major. Each of the simple sounds which, taken together, constitute the whole sound, causes the vibration of a special group of fibres in the auditory nerve. This fact, often repeated, generates a kind of organic predisposition which is confirmed by heredity. If from any cause one of these groups is set in motion, the other groups will have a tendency to vibrate. Therefore, if a singing animal, weary of always repeating the same note, wishes to vary its height, he will naturally choose one of the harmonic sounds of the first. The ultimate origin of the law of melody in organized beings is therefore only the simultaneous harmony, realized in sounds, of inorganic nature. This theory is confirmed by the analysis which has been often made of the song of some birds: the intervals employed by these are generally the same as those on which human melody is founded, the 8th, 5th, 4th, and 3rd major. Reinach, however, observes that Beethoven, who in his Pastoral Symphony has reproduced the song of the nightingale, the cuckoo, and the quail, makes their melodies to differ from those assigned to them by Clark.

The method and direction of the theories proposed by these authors are excellent; but I do not believe that they have discovered the real origin of the sense of music and dancing. I think that the suggestion given in the text, although it requires development, is nearer the truth. Consciousness of the great law by which things exist in a classified form seems to me to be the cause of the sense of graduated pleasure, which constitutes the essence of all the arts.

stringed instruments which accompanied the songs, after the specification of the modes of speech was so far advanced as to distinguish singing—which had already become an art—from the daily necessity of reciprocal communication in words. In this research we must proceed step by step, aided by minute observation, lest we should accept an hypothesis which does not correspond with the facts.

Not only man, but some animals—among others a species of mouse found in South Africa—naturally uses his limbs to moderate or strengthen the light of vision. This mouse was observed to shade its eyes with its forepaws in order to look at some distant object under a blazing sun, as we should do in like conditions. In man, whose arms and hands are readily adapted to this primitive art, the habit is common, even among the rudest savages. Putting sight out of the question that we may consider hearing, which is our present theme, reflex movements, either casual or habitual, have certainly induced primitive men to place their hands on the mouth, either so as to suppress the sound or to augment it by using both hands as a kind of shell. It is easy to imagine the use of shells or other hollow objects as a vehicle of sound, either for amusement or some other cause, and these rude instruments might serve as the first step to the invention of wind instruments. Reflection on these spontaneous experiments would readily lead to the search for some mode of prolong-

ing or imitating the voice. In these attempts men might be guided by their observation of the whistle and song of birds, whose beaks may have served as a model for the construction of the flute and reed-pipe. Pott traces the word for sound to the root *svar*, and hence, after some natural phonetic changes, we have in Lithuanian *szwilpti* for the song of birds. Of all natural objects, different kinds of reeds and the hollow stalks of plants are, owing to their hollow and cylindrical form, best adapted for the imitation of a bird's beak and the sonorous transmission of breath. In many languages the word for a flute is the same as that for a reed. In Sanscrit, *vança* and *vênu* mean a flute and bamboo; in Persian, *nâ* and *nây* mean a flute and reed; in Greek δόναξ, and in Latin *calamus*, have the same double meaning, and many more examples might be given.

Stringed instruments are a more elaborate invention, and may have been suggested by the vibration of a bow-string when it is twanged. The bow is common to all modern savages, and was also found among extinct peoples and those which are now civilized, as well as in prehistoric times. The Sanscrit word for a stringed instrument, *tata* or *vitata*, is derived from the root *tan*, to stretch. Pictet observes that one name for a lute is *rudri*, from *rud*, to lament, that is, a plaintive instrument; in Persian we have *rod* for song, music, or a stringed instrument. The etymology of *arcus* is the same; the root

arc not only means to hurl, but to sing or resound. Homer and Rannjana often allude to the sonorousness of the bow and its string. Homer says in speaking of the bow of Pandarus, "*stridit funis, et nervus valde sonuit.*" And when Ulysses drew his avenging bow, the cord emitted a clear sound like the voice of a swallow. *Lôcàka*, another name for a cord, also means one who speaks, from *lòc*, *loqui;* and the Persian *râd*, *rôda*, a bow-string, also means a song. In the Veda the root *arc'* is used in speaking of the roaring wind, or of a long echoing sound. Again *tâvara*, a bow-string, is from *tan*, to stretch, to sound. The Greek τόνος must be referred to the same root, and signifies a bow-string, a sound, an accent, a tone. Benfey traces the Greek λύρα, in which this root is wanting, through λυδρα, or *rudra*. Kuhn confirms this transformation by the analogy between the Vedic god *Rudra* and the Greek Apollo, both of whom are armed with a bow. Rudra, like Apollo, is a great physician; the former is called *kapardin*, from his mode of wearing his long hair, and *vanku* from his tortuous gait as the god of storms; to the latter the epithets of ἀχερς εχομες and λοξιας are applied; the mouse was sacred to Rudro, and Apollo had the surname of Smintheus, from the mouse, Σμίνθα, which was his symbol.

These wind and stringed instruments were not, in their primitive forms, at once used as an accompaniment to song. Before such use was possible, there

must have been considerable progress in the specification of language, and special songs must have been disintegrated from common speech, which was at first an inchoate song. Possibly some rude instruments were invented for amusement or some other purpose before this specification had taken place. At any rate the use of various instruments for accompaniment was preceded by gesticulation, or the spontaneous striking of some object which coincided with animated speech, or which accompanied it in sonorous cadences.

The rhythm which stimulated primitive men to speak in song, also impelled them to accompany it with gestures and movements of the body, and this was the origin of the dance, which, when the body moved in correspondence with cadenced utterances, was at first merely the accompaniment of song. Tradition, modern ethnography, and the primitive habits of children bear witness to this fact. In addition to the rhythmic motion of all parts of the body, there is the practice of spontaneously beating time with the hands and feet, which were doubtless the first instruments used by man as a musical accompaniment. Hence, owing to the facility of construction, there arose percussion instruments, which were at first made of stone or pieces of wood. So that singing, dancing, accompaniment with the limbs or with some rudely fashioned object arose almost simultaneously, as soon as the process of specification had established

a distinction between song and ordinary speech. The first simple instruments which we have described only made the song, shout, war-dance, or religious ceremony more effective.

When chanted speech was formulated in a fixed order by means of rhythm and the modulations of the voice, it became verse, and the melody itself, as the simple expression of the song which had been cast into verse, or even into an inarticulate chant, was naturally evolved from it. An artistic education is not needed in order to experience the pleasure of rhythmic order in the succession of sound, for a predisposition of the nervous system will suffice. Savages, children, and even animals are sensible of rhythm, which is the order and symmetry of sensations. The dance, as Beauquier justly observes, is the practical form of rhythmic motion and the gesture of music. The motion impressed by sound on the internal organism tends to manifest itself in external gesture, and in fact, the rhythm of the music is repeated in dancing in the limbs and in the whole body of the dancer. The rhythm, regarded in its material cause, need not be accompanied by any very musical sound. The percussion instruments were at first only used to mark and intensify the rhythm.

Melody may be termed a fusion of rhythm and sounds of different pitches, united in time, and assuming a regular and symmetrical form; melody, as others also have observed, constitutes the whole

of music, since without it harmony itself is vague and indefinite. Notwithstanding the numerous elements which may be discerned in melody, and the labour implied in its analysis, it is the facile and spontaneous creation of man, at any rate in its simplest expression; uneducated people, ignorant of music, are able to invent very tolerable melodies, of which we have instances in popular and national songs, which are generated by the musical fancy of those unconscious of the laws of music. Melody has an independent existence, while harmony serves to accentuate its form, and conduces to its subsequent progress among peoples capable of developing it in all its power.*

Music has a powerful influence upon all the senses. It has at all times been supposed to have a healing power, and in the Middle Ages it was believed to cure epilepsy, madness, convulsions, hysteria, and all forms of nervous affections; while in our own time it is usefully employed in cerebral diseases, since it has both a stimulating and soothing effect. Women, since they are generally more nervous and sensitive than men, are more especially affected by music. Animals as well as man are influenced by it, as it has been shown by exact and numerous experiments. Every one knows that many birds can be taught airs, which they sing with taste and lively satisfaction. The major key, with its regular proportions, its full and gradual sounds, arouses in man a sense of life

* See Beauquier's "*Philosophie de la Musique.*"

and joy, while the minor key excites languor and invincible sadness, and animals are affected in the same way.

It is evident that the formation of the scale, the essential foundation of music, varies with the epoch, climate, habits, and physiological conditions of the different races which have successively adopted the diatonic, the major, and minor scales. The music of the Chinese differs from our own, and while it is equally elaborate, it does not quite please us, and the same may be said of the music of the Indians, of the ancient Egyptians, and others. Undoubtedly our scale is more convenient and conformable to art, setting aside the physiological conditions of race, since the notes separated by regular intervals form a more spiritual and independent, in short a more artistic system.

Such are briefly the characteristics of the genesis of song and of music, the actual conditions which make them possible, and their effect on man and animals. We must now consider the subject from the mythical point of view, as we have done in the case of the other arts. We know that the image and emotions are mythically personified by us, and this fanciful reality is afterwards infused into the words used in its expression. It follows from this that speech is not only spontaneously and unconsciously personified as the material covering of the idea or emotion enclosed in it, but that the same thing occurs in language as a whole, at first vaguely, but after-

wards in a definite and reflective manner, in consequence of intellectual development. Among all civilized peoples, whether extinct or still in existence, speech is not only personified in the complex idea or language, but it is deified. It is well known that this is the case in all phases of Eastern Christianity, and that the other Christian churches have since identified the Græco-Eastern idea of the Logos with the Messianic ideas engrafted upon it. If among the prehistoric peoples which most resemble modern savages, speech was personified by the necessity of the perceptive faculty, a vague power was certainly ascribed to it, and even a simple murmur or whisper was supposed to have a direct and personal influence on things, men, and animals. Magic, which is the primitive expression of fetishtic power, embodied in a man, had its most efficacious form in the utterance of words, cries, whispers, or songs, referring to the malign or to the healing and beneficent arts, and it was employed to arouse or to calm storms, to destroy or improve the harvest, or for like purposes.

Beginning with the traditions of our race, even prior to its dispersion, there are plain proofs that words and songs were originally employed for exorcisms and magic in various diseases, and for incantations directed against men or things. *Kar* means to bewitch, as in German we have *einem etwas anthun*, in low Latin *facturare*, in Italian *fattucchiere*, and from *Kar* we have *carmen*, a song or magic formula. The

goddess *Carmenta*, who was supposed to watch over childbirth, derived her name from *carmen*, the magic formula which was used to aid the delivery. The name was also used for a prophetess, as *Carmenta*, the mother of Evander. Servio tells us that the augurs were termed *carmentes*.* The Sanscrit *mâya*, meaning magic or illusion and, in the Veda, wisdom, is derived from *man*, to think or know; from *man* we have *mantra*, magic formula or incantation; in Zend, *manthra* is an incantation against disease, and hence we have the Erse *manadh*, incantation or juggling, and *mòniti* in Lithuanian. The linguistic researches of Pictet, Pott, Benfey, Kuhn, and others show that in primitive times singing, poetry, hymns, the celebration of rites, and the relation of tales, were identical ideas, expressed in identical forms, and even the name for a nightingale had the same derivation. So also the names of a singer, poet, a wise man, and a magician, came from the same root.

Among all historic and savage peoples it was the general practice to use exorcism by means of magic formulas and incantations, combined with the noise of rude instruments; this was part of the pathology, meteorology, and demonology which dated from the beginning of speech, and the first rude ideas of fetishes and spirits have persisted in various forms

* Serv. on the Æneid. What the oracles sang was termed *carmentis*: the seers used to be called *carmentes*, and the books in which their sayings were inscribed were termed *carmentorios*.

down to our days. We have a plain proof of this in a work dedicated to Pius IX. by M. Gaume, in which he sets forth the virtue of holy water against the innumerable powers of evil which, as he declares, still people the cosmic spaces, and similar rites may be traced in the liturgies of all modern religions. This belief is directly founded on the fanciful personification and incarnation of a power in speech itself, in song, and in sound. David had similar ideas of dancing and its accessories, and the walls of Jericho are said to have fallen at the sound of the trumpets, as if these contained the spirit of God. The Patagonians, to quote a single instance from among savages, drive away the evil spirits of diseases with magic songs, accompanied by drums on which demons are painted. To these mythical ideas we must refer the worship of trees, which involves that of birds, so far as they whistle and sing.

The worship of trees and groves is universal: peculiar trees, groves, and woods are worshipped in Tahiti, in the Fiji Islands, and throughout Polynesia; in barbarous Asia, in Europe, America, and the whole of Africa. Cameron, Schweinfurth, Stanley, and other modern travellers in Africa give many instances of this. Schweinfurth describes such a worship among the Niam-Niam, who hold that the forest is inhabited by invisible beings. This worship is naturally combined with that of birds, which become the confidants

of the forest, repeat the mysteries of mother earth, and sometimes become interpreters and prophets to man.

Birds, by their power of moving through the air as lords of the aerial space, by their arts of building, by the beauty of their plumage, their secret haunts in the forests and rocks, by their frequent appearance both by day and night, and by the variety of their songs, must necessarily have excited the fetishtic fancy of primitive men. The worship of birds was therefore universal, in connection with that of trees, meteors, and waters. They were supposed to cause storms; and the eagle, the falcon, the magpie, and some other birds brought the celestial fire on the earth. The worship of birds is also common in America, and in Central America the bird voc is the messenger of Hurakau, the god of storms. The magic-doctors of the Cri, of the Arikari, and of the Indians of the Antilles, wore the feathers and images of the owl as an emblem of the divine inspiration by which they were animated. Similar beliefs are common in Africa and Polynesia.* It is well known that the Egyptians worshipped the ibis, the hawk, and other birds, and that the Greeks worshipped birds and trees at Dodona, in consequence of a celebrated oracle. In Italy the lapwing and the magpie became Pilumnus and Picus, who led the Sabines into Picenus. Divination by eagles and other birds was practised

* See Girard de Rialle: *Mythologie Comparée.* Vol. I. Paris, 1878. A valuable and learned work.

at Rome, and German, Slav, and Celtic traditions abound in similar myths.* Nor are they wanting in the Bible itself, in which we hear of the trees of knowledge and of life, of some celebrated trees in the times of the patriarchs, of the raven and the dove sent out as messengers. The Old Testament speaks of the worship of groves at Ashtaroth in Canaan, of sacrifices under the green trees, and we know that such worship occurred in the Semitic races of Numidia and elsewhere.

The simultaneous elaboration of myths relating to trees and birds as objects of worship, as beneficent or malign powers, and as the transmitters of oracles, necessarily confirmed and extended the personifications of speech and song, and were fused through many sources into a whole, which represented a supernatural agent, endowed with the power of a mediator, of a good or evil spirit or idol. This ultimately led to a universal conception of the efficacy of sound, considered as the manifestation of occult powers. In this mythically spiritual atmosphere, all peoples formerly lived and in great part still continue to live.

As the innate impulse led to the entification of speech and of the singing of men and animals, so it also led to the mythical personification of dancing and instrumental music, in which nearly all peoples have

* The intense character of the worship of groves in Italy appears from Quintilianus, who says, in speaking of Ennius: "*Ennium sicut sacros vetustate lucos adoremus.*"

recognized a demoniac and deliberate power. For this reason, dancing and the noise of rude instruments generally accompanied solemn religious and civil ceremonies, and any remarkable cosmic, astral, or meteorological fact; and in polytheistic times the deities of poetry, dancing, and music served to accentuate and classify ideas.

The instrument became a fetish, and was invested with a mysterious power resembling that which was supposed to exist in all utterances of the animal world. Indeed, instruments were, and still are among savages, regarded as sacred and as an integral part of public worship, so that each had its definite function and office. This need not surprise us, since for such men every object is a fetish, which contains a soul. The Karens, a tribe in Burmah, believe that their arms, knives, utensils, etc., have all a *kelap* or soul, which is termed a *wong* by the negroes of West Africa. The same belief is found in a more explicit form among the Algonquins, the Fijians, and the aforesaid Karens, whose beliefs are characteristic of all peoples which have reached this stage of mythical conceptions. The different objects belonging to a dead man, and his instruments, arms, and utensils, are laid in his tomb, or burnt with his body, and this is owing to the belief that the souls of these objects follow their possessor into another life. The same custom unfortunately extends to persons, and there are instances of this evil practice among rela-

tively civilized nations; the massacre which takes place at the death of a king of Dahomey is well known, and is revolting from the number of victims and from the mode of their sacrifice. It is therefore easy to imagine the way in which musical instruments and the sounds produced by them were personified, since these manifestations seemed to approximate more closely to those of animals.

Fetishtic beliefs concerning magic songs or sounds were, as we have seen, confirmed by the influence naturally exerted on men and animals in their normal or abnormal state by rhythmic and musical sounds, however rude and unformed they may be. Theophrastus tells us that blowing a flute over the affected limb was supposed to cure gout; the Romans recited *carmina* to drive away disease and demons: the old Slav word for physician, *vraçi*, comes from a root which means to murmur; in Servian, *vrac* is a physician, and *balii*, an enchanter or physician. The use of incantations as a remedy prevailed among the Greeks in Homer's time. The Atarva-Veda retains the old formula of imprecation against disease, and the Zend-avesta divides physicians into three classes, those which cure with the knife, with herbs, and with magic formulas. Kuhn believes that the Latin word *mederi* refers to these proceedings, comparing with it the Sanscrit *méth*, *mêdh*, to oppose or curse. Pictet traces the meaning of exorciser in another Sanscrit word for a physician: *Bhisag* from *sag*, *sang*, tojurbo gate.

As the civilization of the historic races advanced, poetry, singing, and musical instruments became more perfect, and were classified as reflex arts. Among the more intellectual classes the earlier fetishtic ideas connected with them almost disappeared, while in the case of the common people, the fetish was idealized, but not therefore lost; it persisted, and still persists, under other forms. Polytheism, modified to suit the place, time, and race, and yet essentially the same, offers us a more ideal form of the arts, each of which was personified as a god, and taken together they formed a heavenly company, which generated and presided over the arts. The greatest poets and philosophers of antiquity retained a sincere belief in the inspiration of every creation of art; and this was only a more noble and intellectual form of the first rude and indefinite conception by which the arts were embodied in a material shape.

Of all the Aryan peoples, Greece represented her Olympus in the most glorious mythical form, set forth by all the arts of description. From the polytheistic point of view, nothing can be æsthetically more perfect than the myths of Apollo and the Muses, which personify harmony in general, and whatever is peculiar to the arts. Such conceptions, by which the arts of speech, song, vocal and instrumental music were embodied in myths, did not disappear as time went on, but were perpetuated in

another form. Music, which was always becoming more elaborate, continued to be the highest inspiration, a divine power, an external and harmonious manifestation of celestial beings, of eternal life, and the order of the world. This conception was shadowed forth in the Pythagorean theory of the mythical harmony of the spheres: that school regarded the world as a musical system, an harmonious dance of planets.

The fetishtic and mythical origin common to all the arts is clearly shown by the fact that at a period relatively advanced, but still very remote, they were formulated in the temple, a symbolic representation of their deities, to be found even among the most primitive peoples. The evolution of the arts towards a more rational conception, divested of mythical and religious influence, took the form of releasing each art from bondage to the temple, and enabling it to assume a more distinct, free, and secular personality, an evolution which was however somewhat difficult and slow in the case of vocal and instrumental music. Although in our own time it has achieved a field for itself, yet in oratorios and ecclesiastical music the old conception remains.

The joys of the Elysian fields and of Paradise, as rewards of the good and faithful after death, varying in details with the moral and mythical beliefs of various peoples, were heightened by concerts and musical symphonies, as, owing to natural evolution

and the introduction of Oriental ideas, it appears even in the Christian conception of Paradise. For the great majority of believers, earthly music is only an echo of that celestial music, and participates in its divine efficacy. In the Christian Paradise there were saints to preside over the instruments, the singing, and music; the visions of the ecstatic, the hallucinations of the mystic, and the precious memories and images of the dead, are often combined with sweet and heavenly music, and this completes the fetishtic idea which enters into every phenomenon with which man has to do. For if inanimate objects and instruments were supposed by the primitive savage to have a soul which followed the shade of the dead man into the mythical abode beyond the grave, in modern religions the earthly instruments, the fanciful idols of the common people and of mystics, also resound in Elysium and the heavens, touched and inspired by choirs of angels and by seraphic powers.

The deep and sonorous music of bells, of organs, and other ecclesiastical instruments, the chants which resound through vaulted roofs amid the assembled worshippers, ecclesiastical lights, and the fumes of incense, inspire many Christians with a deep and æsthetic sense of the divine presence; and at such moments their vivid faith joins heaven and earth in the same harmonious emotion. The music, chants, and harmony, combined with other solemn rites, are

unconsciously embodied by us, entering into our hearts as they circle round the church, and they become the mysterious language of celestial powers. We are once more immersed in the world of fancy and of myth, purified however by the evolution it has undergone. This exalted state of mind is also experienced by those who listen to profane music, since the harmony and modulation of sound, and the expression given to it by the combination of various instruments, immediately affect the soul of the listener as a whole, without the aid of reflection, and a substantial entity which deliberately fulfils its spontaneous cycle of development is thus created; in a word, the harmonies they hear are unconsciously personified. Any one who makes a deep and careful analysis of his states of consciousness in these circumstances will admit the truth of this assertion.

The ordinary modes of expression respecting music, which are in use not only among uneducated people, but among those who are educated and civilized, display the earlier and innate belief in the mythical representations of this art. The expressions may be often heard: What divine music! What angelic harmony! This song is really seraphic! and the like. Such expressions not only bear witness to the old mythical sentiment, and to the ultimate development of its form, but they also indicate the actual sentiments of the speaker. The personifying power of the human intelligence is such as to recur spontaneously,

even in one who has abandoned these ancient illusions, if he surrenders himself for a while to his natural instinct. It has often happened that a man who listens to a melodious and beautiful piece of music is gradually aroused and excited by its sweet power, so as to be carried away into a world of new sensations, in which all our sentiments and affections, our deepest, tenderest, and dearest aspirations blossom afresh in our memory, and are fused into and strengthened by these harmonies; we seem to be transported into ethereal regions, and unconsciously surrender ourselves to their influence. This kind of natural ecstasy is not produced merely by the physiological effects of music on the organism, by the education of our sense of beauty, and of our reminiscences of earlier mythical emotions, but also by the innate impulse which still persists, leading us to idealize and vivify all natural phenomena, and also our own sensations.

But if among the common people, the devout, and occasionally also among people of culture, this highest art is not divested of its mythical environment, which still persists, although in a more ideal form, yet it has followed and still follows the general evolution of human ideas. The art of music was identified with song and with the mythical personality ascribed to it, of which these instruments were the extrinsic and harmonious echo; at first, like the other arts, it was a religious conception and entity pertaining

to the Church, but it gradually assumed a character of its own, was dissociated from the Church, and became a secular art, diverging more and more from the mythical ideas with which it had before been filled. When instruments increased in number, and became more perfect in quality; when harmony, strictly so called, was developed and became more efficient, instrumental music still continued to be the servant of vocal music, and was employed to give emphasis, relief, warmth, and colour to the art of song, which continued to be supreme. Song had its peculiar musical character, and the human voice, alone or in a chorus, might be regarded as the type of instrumental music, rendered more effective by the words which expressed the ideas and sentiments of such songs by harmonizing the various vocal instruments in accordance with their tones and varying *timbre*. Instrumental music, by the melodious harmony of artificial sounds, had however a vast field peculiar to itself, and an existence independent of the human voice. This was and is, in addition to its release from the bonds of myth, the necessary result of the evolution of this highest art.

Instrumental music, considered in itself, with the symphony as its highest expression, has been declared by a learned writer to be the grandest artistic creation, and the ultimate form of art in which the vast cycle of all things human will find its development. A symphony is an architectural construction

of sounds, mobile in form, and not absolutely devoid of a literary meaning. Yet we must not seek in instrumental music for that which it cannot afford, such as the ideas contained in words. Any one must admit the futility of the attempt to give a dramatic interpretation or language to instrumental music, who reads the description attempted by Lenz and other writers of some of Beethoven's sonatas. Instrumental music does not lend itself to these interpretations, since it is an art with an independent existence. We have observed that in its first development it was used as an accompaniment to the voice, or associated with the movements of the body, or with the dance, and consequently had not the independence which was gradually achieved, until it culminated in the symphony. Instrumental music adds nothing to literature, nor to the expression of ideas and sentiments, but in it pure music consists, and it is the very essence of the art. Literature and poetry belong to a definite order of ideas and emotions; music is only able to afford musical ideas and sentiments. Instrumental music has its peculiar province as the supreme art which composes its own poems by means of the order, succession, and harmony of sounds ; it delights, ravishes, and moves us by exciting the emotional part of our nature, and thus arouses a world of ideas which may be modified at pleasure, and which may, by the powerful means at its disposal, produce effects of which instruments merely used for accompanying the

voice are incapable. When instrumental music was released from all servitude to other arts, as well as from all positive sense of religious emotions or mythical and symbolic prejudice, thought was able to create the art of sounds, which contains in itself a special aim and meaning.

We have thus reached the term of our arduous and fatiguing journey. We flatter ourselves that a truth has been gleaned from it, and this conviction is not due to a presumptuous reliance on our powers, but on the conscientious honesty of our researches, combined with a great yet humble love of truth. Others, who are better endowed with genius and learning will judge of our success, and we shall willingly submit to their criticism and correction, so long as they are fair and unprejudiced and only aim at the truth. From animal perception, and the mental and physical fact into which it is to be resolved, we have traced the root which in man's case grows into a mighty tree; the first germ of all the mythical ideas of every people upon earth. The subjectivity of which animals and man are spontaneously conscious in every internal and external phenomenon, the subsequent entification of ideas, even after thought has attained to these more rational forms, are the great factors of myth in all its forms, of superstitions, of religions, and also of science. We have reduced all the normal and abnormal sources of these fanciful ideas to that single source which we

have just indicated. Penetrating below the kingdom of man into that of animals, we have there discovered where the germ was formed, and this completes the doctrine of evolution and bears witness to its truth. The evolution of myth went through the regular process, by which it was formulated and simplified, until it was resolved into all the sciences and rational arts, and was thus transformed into a positive science, passing through an ulterior stage of myth and science before it took the definitive form of a purely intellectual conception.

We have seen that the source of myth is the same as that of science, since perception is the condition of both, and the process pursued is identical, although the subject on which the faculty of thought is exercised is changed. Therefore the problem of myth, which includes every achievement of the human understanding, and fills all sociology, is transformed into the problem of civilization. Thought has run its course in the vast evolution from myth to science, which is rendered possible by the permanence and duration of a powerful and vigorous race, and hence came the gradual transition from the illusions which involve the ignorance and servitude of the majority of the people to truth and liberty, since these are released from their earlier wrappings, and the human race rises to a sense of its nobility and highest good. We have considered this evolution as a whole and in its details, and have seen that every achievement of the human

understanding passes through the same phases, and reaches the same goal. We have adduced witnesses to confirm our own observation from history and ethnography in general, apart from any bias for a religious and scientific system. We believe that in this way alone there can be any true progress in the science which we have undertaken to consider in this essay.

The result of the inquiry shows that by a slow yet inevitable evolution man rose from his primeval condition of error, illusion, and servitude to his fellow man, to that degree of truth and liberty of which he is capable: he was so made that he necessarily advanced to the grand height which has been attained by the most laborious and intelligent of the human race. He rises higher, and is more sensible of his own dignity, in proportion as he becomes, within the limits of his nature, the artificer of his own greatness and civilization. While many peoples have become extinct, others have, owing to their natural incapacity, remained in a savage and barbarous condition, while others again have attained to a certain amount of civilization, but their mental evolution has stopped short. Our own race, originally, as I believe, Aryo-Semitic, for it is possible that these two powerful branches were derived from a common stock, has persisted without interruption in spite of many adversities and revolutions, and has displayed in successive generations the progress of general civilization, and the goal which man is able to reach in his highest

perfection of mind and body, favoured by the physical and biological conditions of climate. In this race, whether with respect to myth and science or to civilization, the theory of evolution has practically been carried out in all its phases and degrees.

Science and freedom were the great factors of civilization, or of progress in every kind of conceptions, sentiments, and social conditions: the first dissolved and destroyed the matrix of myth in which the intelligence was at first enveloped, and liberty, which was wholly due to science, made steady progress a matter of certainty. So that it may be said that the whole web of human history, so far as it consists in civilization or the progress of all good things, of the arts, and of every intellectual and material achievement, was the conflict of science, and her offspring freedom, against ignorance, and the despotism which results from ignorance, under all the social forms in which they are manifested. So that all good and wise men, sincere lovers of the dignity of mankind and of the welfare of society and of the individual, ought to feel a deep reverence and love for these two powers, and to be ready to give up their lives to them. For if—which in the present condition of the world is an impossible hypothesis—they were to fail, the human race would be irretrievably lost, since these are our real liberators from barbarism, which have upheld mankind in the struggle against it, under whatever name these principles have appeared.

I am aware that my theory will meet with many obstinate and zealous opponents in Italy, since I use the simple terms of reason and science, unqualified by other arguments, and I maintain the absolute independence of free thought. Opposition is the more likely since science and freedom have been held responsible for sectarian intemperance, for the disturbances of the lower orders, for the inevitable disasters, the social and intellectual aberrations both of the learned and of the common peoples: science and freedom are held to have repeated the wiles of the serpent in Eden. But I am not uneasy at the thought of such opposition, since the progress of the human race has been owing to the fact that men convinced of the truth took no heed of the superstitious and interested war waged against them, sometimes from ignorance of things in general and of the law which governs civilization, sometimes from honest conviction.

The falsity of the accusation so generally made against science and freedom will appear if we consider that all the benefits we now enjoy, civil, scientific, and material, and which are especially enjoyed by the men who inveigh most strongly against these two factors, are solely derived from science and freedom. Without them we should be in the civil, intellectual, and material condition of the kingdom of Dahomey, and in the savage and barbarous state of all primitive peoples. If the misunderstanding of truth or an im-

perfect science is injurious, it must not therefore be rejected. Science is the constant and vigilant generator of all social improvement, and the most formidable enemy of the tyranny of a despot, of an oligarchy, or of the multitude, whether it take a religious or secular form. Since sharp instruments are powerful aids to civilization and material prosperity, they are not to be altogether set aside because some persons die miserably by them. As I have always maintained, and now repeat with still stronger conviction, science and freedom, the ever watchful guardians of the human race, are and must always remain the sole remedies for the evils which threaten us. I do not dispute the beneficent influence of other factors combined with these, but, taken alone, they would be powerless, and if science were eclipsed they would be transformed into fresh causes of servitude and ignorance, as it has often appeared in past times when the laws of science and of freedom have been set at nought. I therefore declare science and freedom to be the portion of all, and they should be as widely diffused as possible, since the way to knowledge and a worthy life is open to all men. It is a blasphemy against heaven and earth to presume, in the so-called interest of civil order, to keep the majority of the people in the ignoble servitude of ignorance, and men do not perceive that they thus become ready for any disturbance, and the tools of rogues and agitators.

I hope and pray that reverence for science and

freedom may ever increase in Italy. It will be an evil day for her if such reverence be lost, and she will become with every other people in like case a wretched spectacle, and will fall into such abject misery as to become the laughing-stock of every civilized nation. It will be understood that I do not erect science and liberty into fetishes to be generally adored: they are only sacred means to a more sacred end, namely, to enable men to practise and not merely to apprehend the truth, which in other words is goodness. Science and freedom are valuable only so far as they teach, persuade, and enable us to improve ourselves and others; to exercise every private and public virtue; to claim only what is due to ourselves, while making the needful sacrifice to the common good; to have a respect for humanity, and to venerate knowledge only so far as it is combined with virtue; to attempt in every way to alleviate the miseries of others, to deliver their minds from ignorance and error; to do right for its own sake without coveting rewards in heaven or on earth; to submit to no dictation but that of truth and goodness.

With these sacred objects in view, whatever may be said to the contrary, we shall, in addition to the ineffable fruition of truth for its own sake, ever draw nearer to the ideal of the human race, and the time will come when an apparent Utopia shall be actually realized, in accordance with the mode and process of growing civilization. Not by excesses, tumults, and

folly, but by unshaken firmness and tenacity we shall promote science and freedom. If this modest essay has done anything to show the necessity of such culture, and in what way science and freedom, and these two factors only, have brought forth fruit throughout the history of the human race, my labour will be richly rewarded, and I may say with satisfaction—*dies non perdidi!*

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